

May 1946

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**Flexible Joints take
care of seasonal
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This mobile transfer pump unit for use with storage tanks is equipped with two lengths of PENFLEX Unloading Hose which give large capacity and PENFLEX Hand-Distributing Lines which, if needed, have added value for redistribution.

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1. Hardness = 9 Mohs' scale
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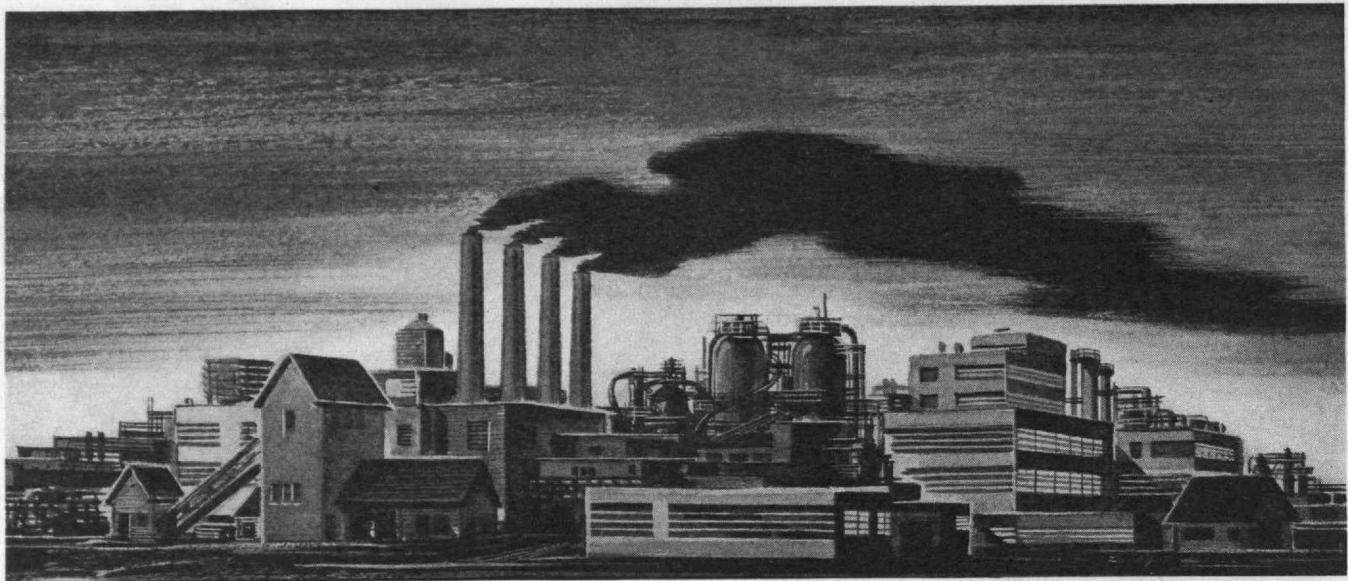
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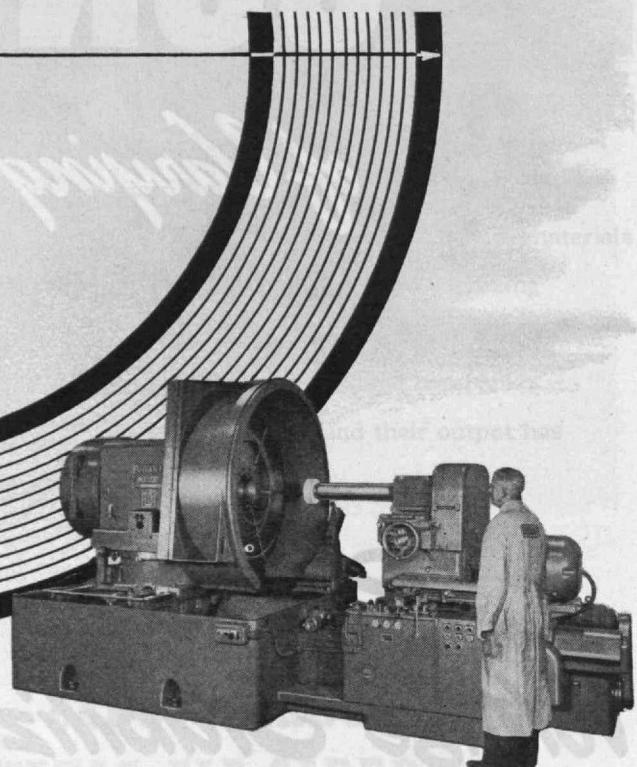
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HYDRAULIC INTERNAL GRINDER

60" MAX. WORK DIA.



Another Bryant Postwar Development

The NEW Bryant No. 150 is a giant "internal grinder" with typical Bryant "fingertip" control. It retains the famous Bryant feature of three-point wheel slide suspension which is the basis of Bryant's reputation for high production of accurate work with fine finish.

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The work spindle is bored out to accommodate spindles or other long work which may be chucked conveniently by extension through the work spindle. The work spindle is designed so that chucks or fixtures may be mounted on either or both ends.

The NEW Bryant No. 150 will handle bore or bore and face grinding in a single chucking, and bores may be either straight or tapered. Write for a copy of the new catalog sheet which gives full details, capacities and dimensions.

If your internal grinding work comes within the range of $\frac{1}{16}$ inch diameter bore up to 60" diameter swing, it will pay you to

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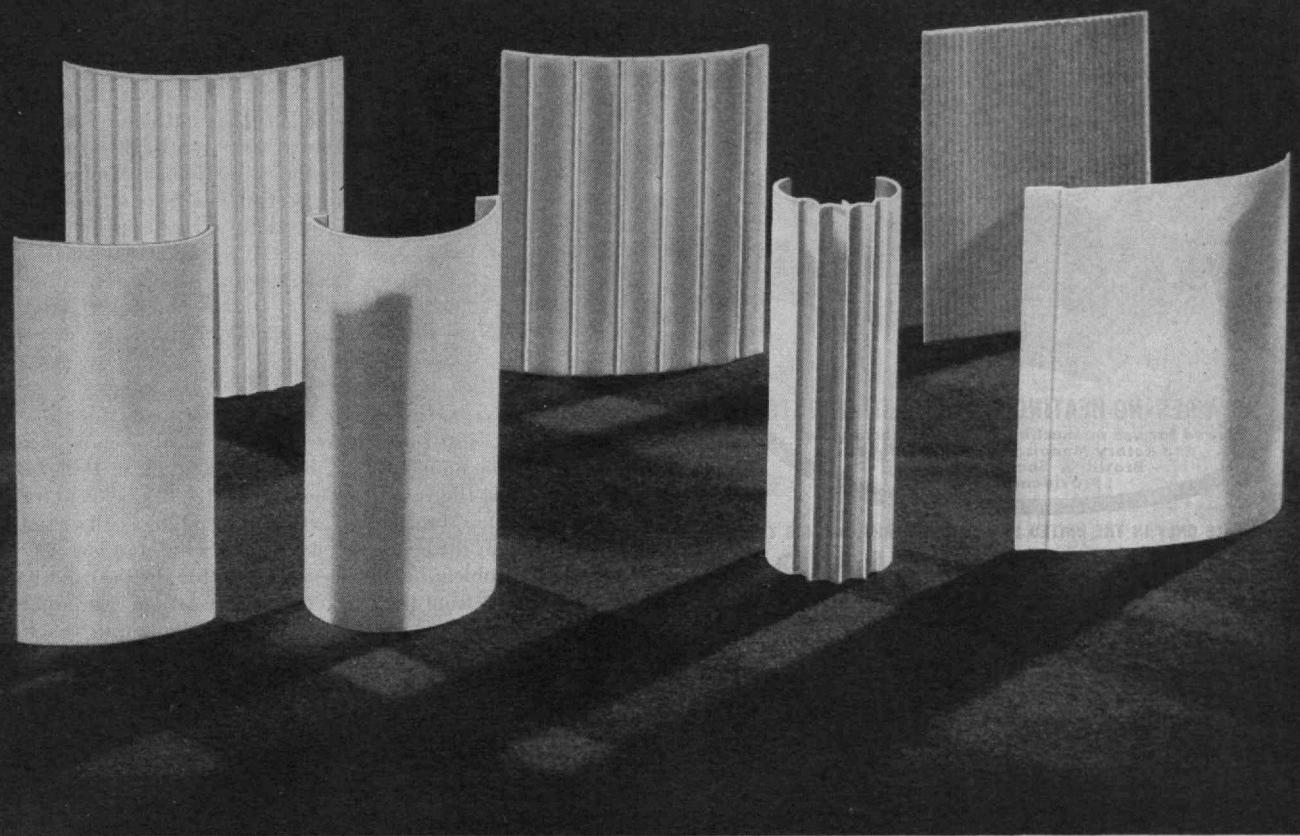
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DEVELOPED FOR
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The sections shown here illustrate Sandee progress in the development of extruded plastic sections for the rapidly expanding fluorescent lighting field. Plastics are a natural for this purpose. Correctly designed, and with materials properly selected they offer such impressive advantages as, 1. light weight, 2. controlled light transmission, 3. rigidity, 4. dimensional stability, 5. ease of cleaning and 6. the ability to be extruded in shapes which add to the aesthetic appearance as well as the practical efficiency of such lighting fixtures.

Our development work has been extremely educational and our technical personnel can discuss with authority your individual problems in extruded plastic sections for fluorescent lighting fixtures. This same service is also available for other sound industrial applications. Specific fields will be featured in future advertisements.

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Our extra quality sash cord, distinguished at a glance by our trade-mark, the colored spots. Especially well known as the most durable material for hanging windows, for which use it has been specified by architects for more than half a century.

THE TABULAR VIEW

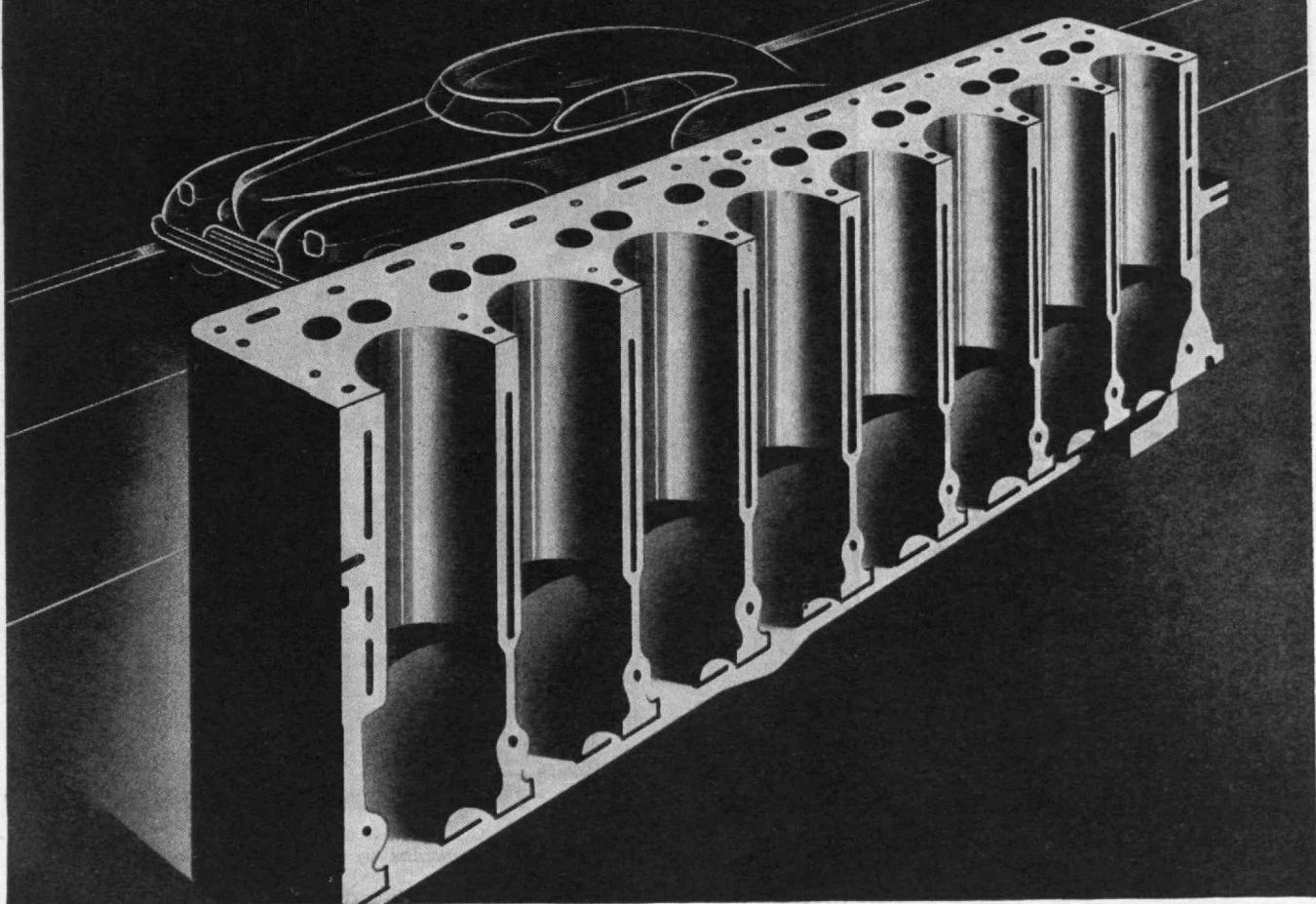
High Road to Brooklyn serves as a living monument to John August Roebling, who first invented wire rope and then advanced the design of suspension bridges further in a few decades than it had progressed in the previous millennium. In pursuit of his hobby of unearthing historical data of well-known engineering structures, E. H. CAMERON, '13, condenses for The Review material which he has gathered for a book-length manuscript on the famous Brooklyn Bridge. In the first part of this two-part article, Mr. Cameron acquaints us (page 419) with the social and engineering conditions faced by the bridge builders of the 1870's and 1880's. Head of the technical publications staff of Jackson and Moreland, Mr. Cameron has had a third of a century of engineering experience embracing the design, construction, and engineering supervision of projects in New England, the Middle West, and the Southwest.

Investing in Science for the Future calls for the creation of new institutional arrangements to provide venture capital, in the opinion of W. RUPER MACLAURIN, Professor of Economics at the Institute and son of M.I.T.'s beloved former president. Dr. Maclaurin's article (page 423) is the result of his interest in the economic aspect of science and engineering, on which problem he has been working for the past five years under a grant from the Rockefeller Foundation. A graduate of Harvard University in 1929, Professor Maclaurin was Fiske Scholar at Trinity College, Cambridge, during the following year, and as Sheldon Traveling Fellow he visited Australia in 1934 and 1935. Dr. Maclaurin joined the Institute staff as assistant professor of economics in 1936 and was advanced to associate professor in 1940 and to professor in 1942.

The Scientist's Social Responsibility is discussed (page 427) by FRANCIS BITTER, who has recently returned to the Institute as associate professor of physics after a five-year leave of absence. A graduate of Columbia University in 1924, Dr. Bitter was a National Research Fellow at the California Institute of Technology (1928-1930) and John Simon Guggenheim Fellow at the University of Cambridge (1933-1934). In 1934 he became associate professor in the Institute's Department of Mining and Metallurgy and developed a laboratory for the production of intense magnetic fields for his studies of the magnetic properties of materials. He is author of *Introduction to Ferromagnetism*. From 1940 to 1945 he was on leave of absence to the Navy Department where he worked on degaussing methods and underwater weapons. As civilian scientist and later as naval commander he set up research sections on mine warfare and naval aviation and took active part in setting up the joint Army and Navy target group to study selection of bombing targets and estimation of damage in the war against Japan. The Review is pleased to publish Dr. Bitter's article — an outgrowth of his war experience — the underlying theme of which is that the social responsibility of the scientist lies in applying the scientific method to man's social and economic problems. Comments on this Review article — and others — will be most welcome.

Recording Radar Signals which may last but a few millionths of a second has been a problem of increasing difficulty as radar signals were moved to higher and higher frequencies. HERBERT GOLDSTEIN, '43, formerly of the Institute's Radiation Laboratory and now at the Jefferson Physical Laboratory, Harvard University, describes (page 415) ways in which improvements on fluorescent screens, cathode-ray tubes, and photographic emulsions were put to use to record signals beyond the capabilities of pre-war equipment and techniques.

Molybdenum in cast iron promotes uniform hardness in varying sections.



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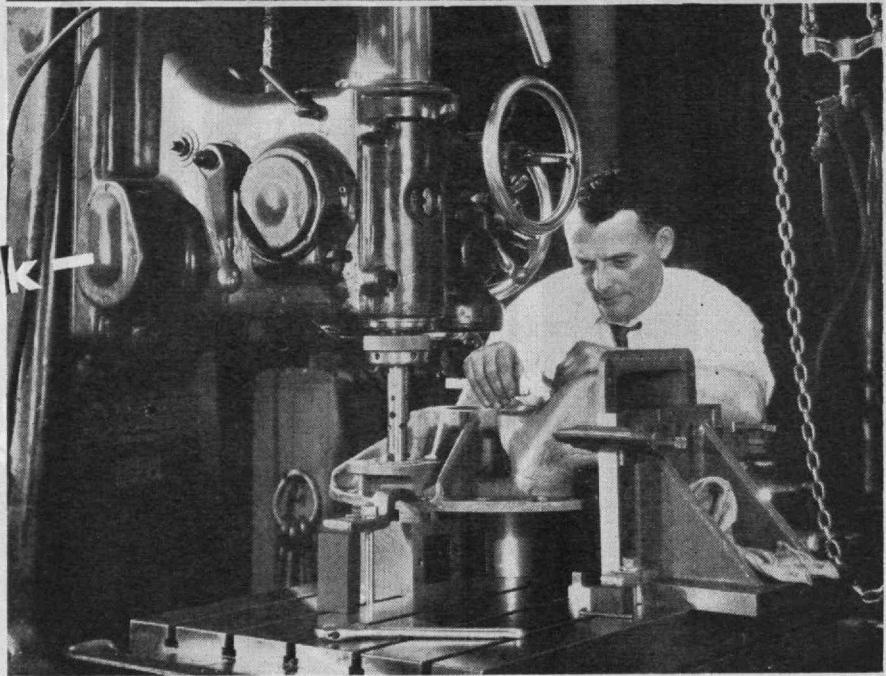
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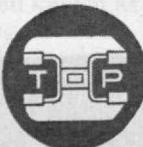
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MAIL ORDERS

"Where do we go from here"

Productivity Index of seven major industries in comparison with averages for "All Manufacturing" (from Bureau of Labor statistics)

	1919	1925	1931	1937	1938	1939	1940	1941	1946
All manufacturing	58.0	86.0	107.3	119.6	121.8	132.4	138.8	142.7	?
Cement	60.2	86.0	119.4	124.5	128.7	139.4	138.0	149.8	?
Chemicals	41.5	71.0	112.7	126.6	124.3	138.7	133.0	*	?
Cotton Goods	85.0	96.3	94.0	136.6	137.0	146.1	155.6	161.6	?
Automobiles	42.7	74.2	94.6	119.3	118.4	118.8	120.4	*	?
Lumber and Timber Products .	95.8	92.8	109.9	100.0	106.2	121.3	129.0	133.3	?
Petroleum Refining	49.4	93.2	116.7	167.1	177.3	193.4	200.0	207.6	?
Tobacco Products	68.1	83.6	112.1	145.2	152.8	161.9	162.3	166.7	?

* Figures not available

It is not surprising that the petroleum refining industry has an outstanding record in increasing efficiency, reducing production costs, and improving product quality, for this industry has consistently made the greatest use of all available engineering assistance.

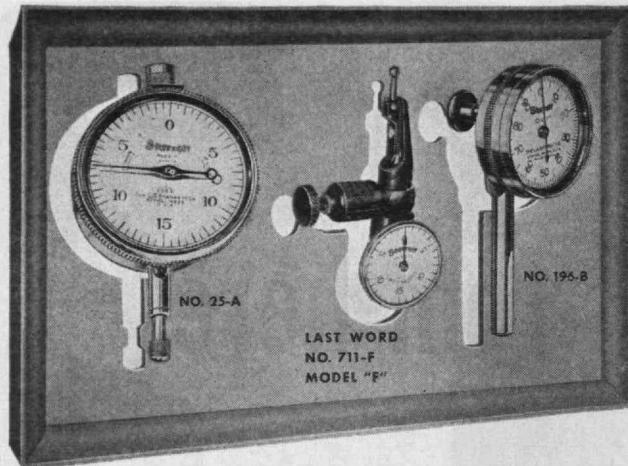
The post-war resumption of tooth-and-nail competition means a spirited continuance of technological advancements. For the race of the future it behooves every concern, in every field, to make use of the newest methods, latest

processes and most advanced engineering—particularly in the face of rising labor and other costs.

It is largely on the development of improved and more efficient processing methods and plant designs that the Badger business is founded. Badger has an impressive record of achievement in helping many chemical, petroleum and petro-chemical companies—especially in continuous-process, large-unit production, and in design for higher quality products.

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PROCESS ENGINEERS AND CONSTRUCTORS FOR THE CHEMICAL, PETROLEUM AND PETRO-CHEMICAL INDUSTRIES



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but all feature Starrett accuracy, and workmanship, clear, easy-to-read dials, maximum convenience in installation and operation. For a detailed display of the complete line of Starrett Dial Indicators, write for Dial Indicator Catalog "L".

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BATH
IRON WORKS
CORPORATION

Shipbuilders and
Engineers

BATH, MAINE

MAIL RETURNS

Cover Comment

FROM RICHARD H. POUGH, '26:

James Clark of the preparation department at the American Museum of Natural History was flattered by your use of a picture of their flock of Canada geese in the dome of the Bird Hall on your March cover. I showed him the cover recently, and he was curious to know whether by any chance the photograph had been sold to you as a picture of real living geese.

New York, N. Y.

The photograph of geese was purchased for its pictorial quality alone and as possible cover material. It was evident that such a photograph could hardly have been made under natural conditions, but it was not known, until Mr. Pough's letter was received, that the photograph was made in the Bird Hall of the American Museum of Natural History. — Ed.

Selenite Sights

FROM FREDERICK A. STEBBINS:

I was interested in the discussion of the moon in the "Trend of Affairs" in the March issue. As I make a hobby of astronomy and am interested in examining the moon with an 80X refractor, I would like some further information on Gruithuisen's *Wallwerk*, not that I believe it to be genuine, but simply because such mistakes furnish something interesting to look for.

Is the *Wallwerk* the small crater now named Gruithuisen? If not, can you tell me how to locate it with reference to some of the other named craters?

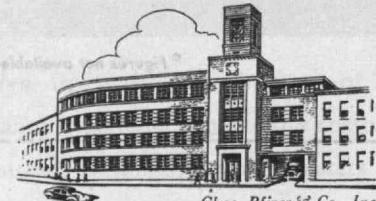
Springfield, Mass.

FROM WILLY LEY:

Gruithuisen's "discovery" is not the small crater now named after him and situated at about 40 degrees east and 33 degrees north (lunar latitude and longitude). The famous *Wallwerk* is almost in the center of the visible half of the moon; the nearest named crater is *Schröter*. The *Wallwerk* borders one of the smaller rills of that section; if you begin with *Schröter* and follow the rills in the vicinity you should find it without too much trouble. On some German lunar maps it appears under the name of *Schneckenberg* (snail mountain) because it bears a faint resemblance to the shell of a snail which is partly covered with mud.

Happy hunting!
Washington, D. C.

Speed with
Economy

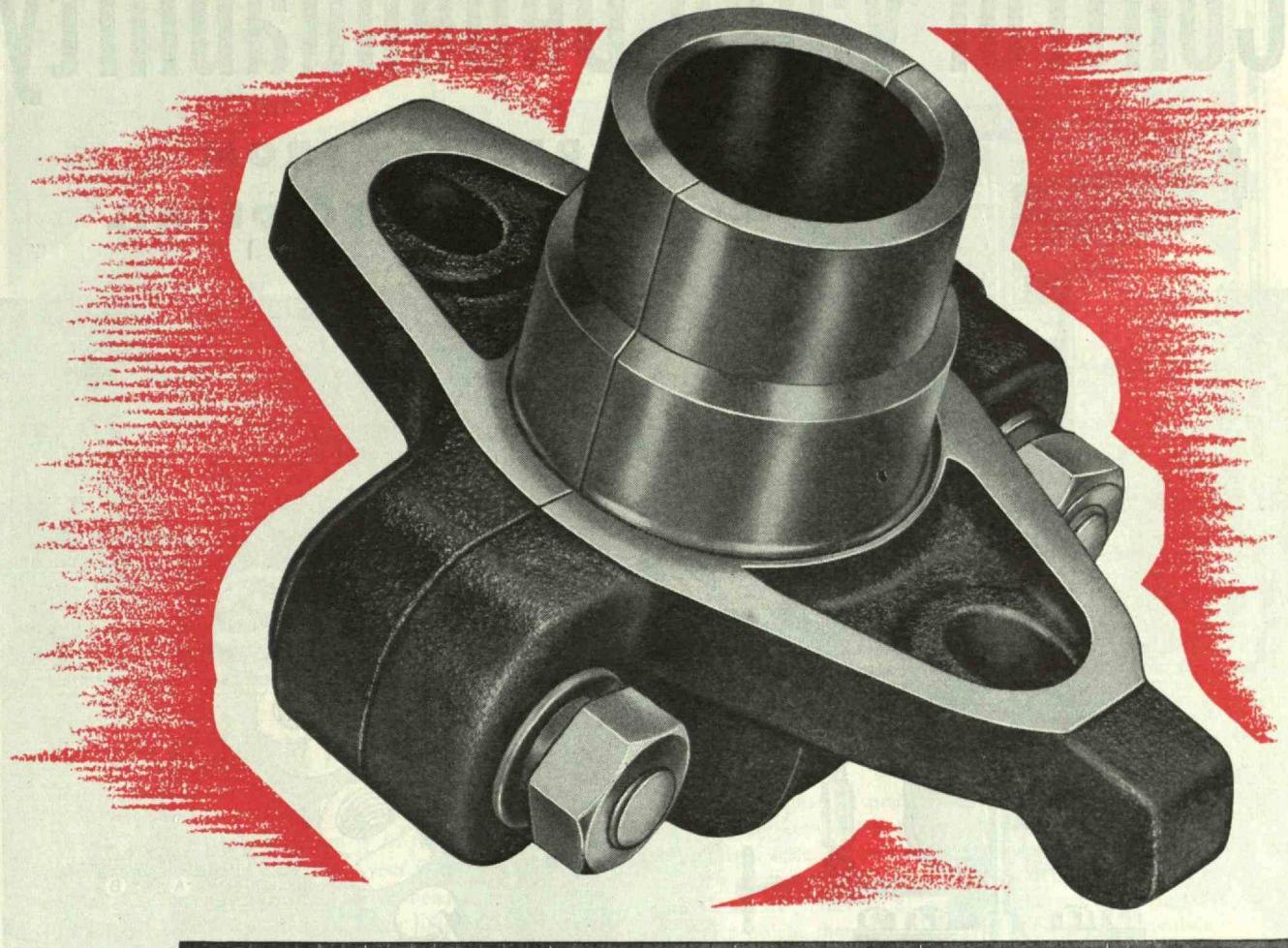


We have been working with this well-known chemical manufacturer for the past 18 years. The research laboratory and office building above is one of twelve buildings so far constructed under a program which is still active and continuing.

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LEADERSHIP BASED ON ACCOMPLISHED FACTS...



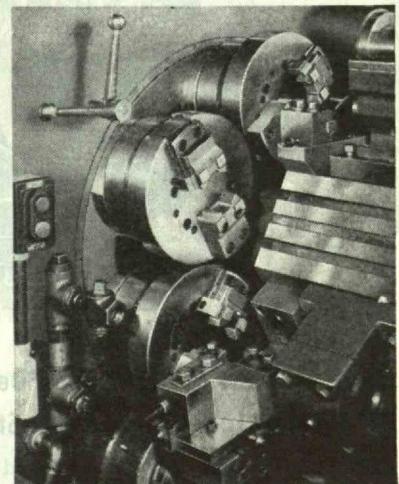
A case of machining a complete sub-assembly

Illustrated above is a malleable iron hub used in textile machinery. The two halves bolted together as shown are loaded exactly like a single piece, and our Model 16 Six Spindle Automatic Chucking Machine performs the facing, turning, chamfering and undercutting operations with a substantial saving of time and cost.

This interesting job may well suggest important possibilities in connection with your products . . . Our engineers will gladly put their time and experience at your disposal to help you discover profit-making advancement in any machining application. Consult the New Britain sales engineer in your locality or write The New Britain Machine Company.



M-01035



NEW BRITAIN AUTOMATICS

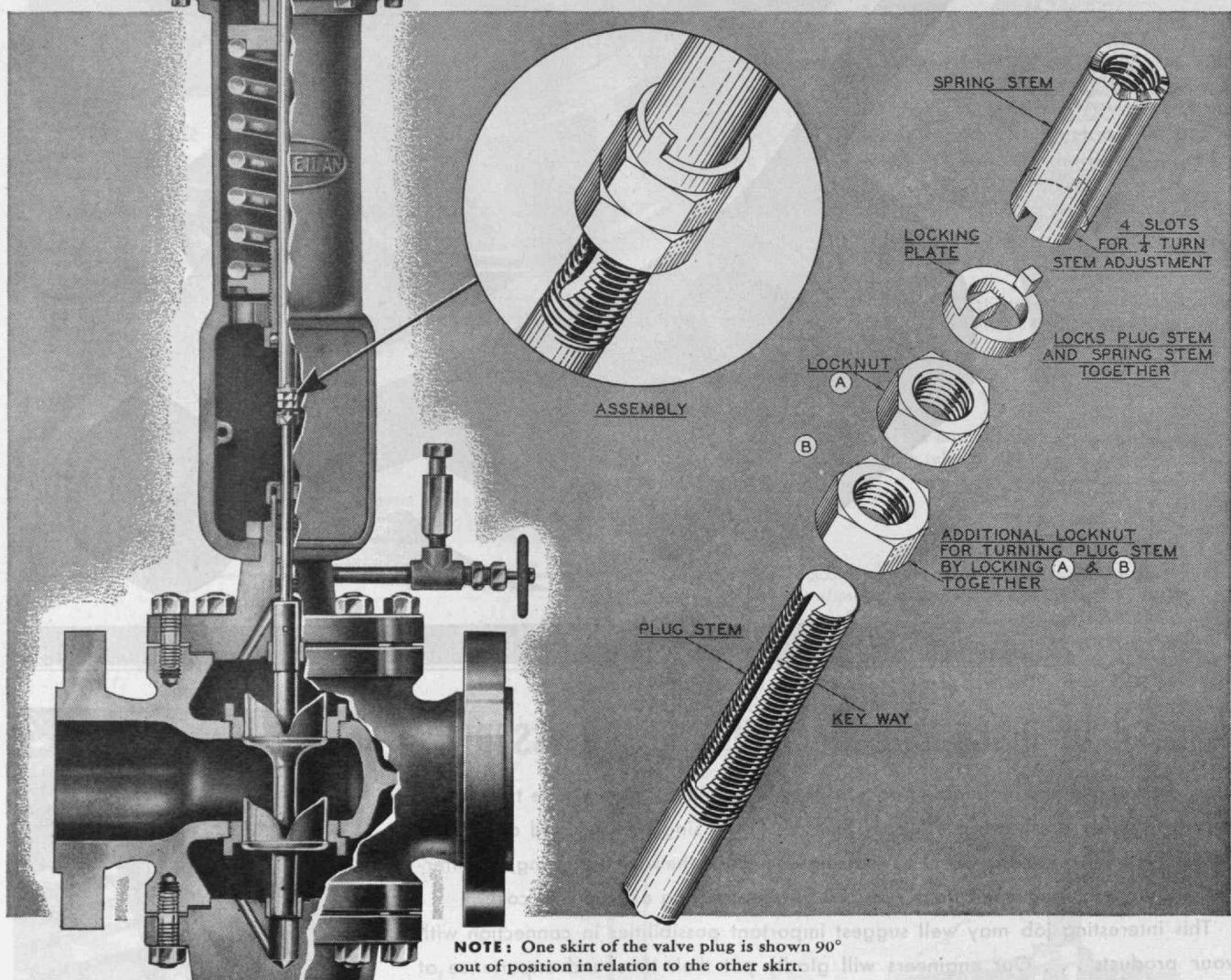
THE NEW BRITAIN MACHINE COMPANY

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NEW BRITAIN-GRIDLEY MACHINE DIVISION

Control Valve Dependability

**RESULTS FROM
ATTENTION TO DETAIL**



NOTE: One skirt of the valve plug is shown 90° out of position in relation to the other skirt.

New Mason-Neilan Design Provides Positive Lock Between Plug Stem and Spring Stem

Under conditions of high fluid velocities, a valve plug may tend to rotate or spin. This condition is not detrimental if the mechanical construction is sufficiently rugged to counteract the torque generated. In other words the plug, plug stem, spring stem and diaphragm button must be locked together as a unit.

In the conventional plug-spring stem assembly, the plug stem locknuts are the only non-positive fastener. Locknuts can be a source of trouble on large valves because their holding power depends on mechanical tightness.

With the Plug-Spring Stem Key Lock, standard on all valves sized 4" and above, the torsional strain is entirely removed from the locknuts and placed on the two lugs of the locking plate. This is accomplished by means of four slots milled in the end of the spring stem which receive two equally spaced lugs on the locking plate. The locknuts simply hold the locking plate in position. A keyway in the plug stem engages one lug on the locking plate and completes the lock. The four mating slots in the spring stem provide for the adjustment of the plug position by quarter turns of the plug stem.

By actual test, this new Mason-Neilan assembly withstands torsional stress to the point of stem failure. The resistance is three to four times that of tightly set locknuts in the locking direction, and many times the resistance in the counter-clockwise direction.

MASON-NEILAN REGULATOR COMPANY, 1190 ADAMS STREET, BOSTON 24, MASSACHUSETTS

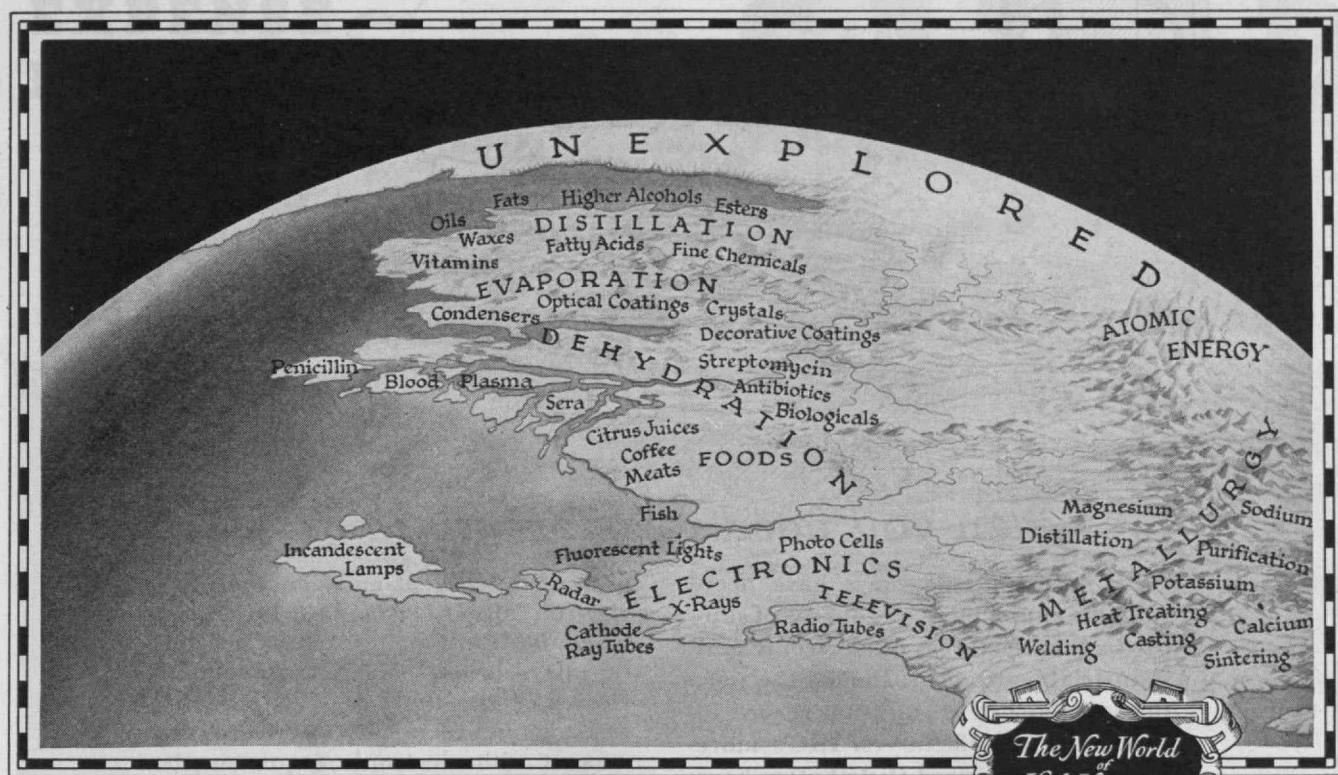
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Mason Regulator Co. of Canada, Ltd., Montreal, Canada





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High Vacuum offers to industry a vast new area, virtually unexplored. No one knows its extent or its resources. No one can say what opportunities are there for your industry. No one can tell you, but National Research Corporation can help you find out as it has helped many others. It can furnish the technology and equipment as it did for the wartime production of Magnesium.

In 1938 the United States produced 2,400 tons of Magnesium while Germany made six times as much. As the war progressed, the demand for aircraft and incendiary bombs increased. Magnesium had become a fighting metal.

As this country became increasingly involved in war, Magnesium became a strategic material that must be produced in quantity — at any cost. There was no time to debate processes. From 1940 to 1942 OPM and WPB built 14 plants using four basic methods never before tried in this country. In 1943, 185,000 tons of Magnesium were produced.

While three of the new processes struggled with problems of large-scale production, WPB turned to the National Academy of Science for further recommendations and was directed to the Canadian National Research Council and the Dolomite-Ferrosilicon process, then developed on a laboratory scale by Dr. Lloyd M. Pigeon.

In this process Magnesium is vaporized from briquettes at temperatures from 1100° to 1150° C. and pressures of about 10-2 mm. Hg. The vaporized metal is crystallized in cooled cylinders. While the process appeared to be the simplest of all

the methods, it was, in practice, harassed by grave difficulties, not the least of which was the maintenance of high vacuum on an industrial scale, hitherto undreamed of.

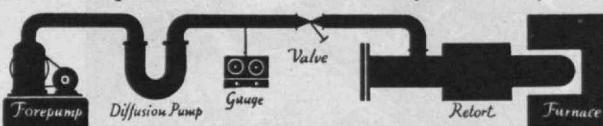
At the request of WPB, National Research, under a DPC research contract (Plancor 708), was given the task of solving this vacuum problem, then the largest industrial project involving pressures in the micron range.

Six weeks after receiving the assignment we had a pilot plant in operation. During the following four months we designed large diffusion pumps to improve the yield and shorten the cycle, developed recording gauges for process control and evolved vacuum engineering techniques of value in the design of the larger plants.

Deliveries of equipment were made for a full-scale plant already building in Canaan, Connecticut, for the New England Lime Company. Of all the Magnesium plants begun in wartime, some completed before we were given our assignment, this was the first to be in production. Later equipment was supplied to others, including Ford at River Rouge.

It has been said of the Dolomite-Ferrosilicon process that it was "the most spectacular development of the war" and "the primary candidate for postwar scrapping". Whatever its fate, we are proud of the work that we did in making it quickly practical. This is typical of the sort of engineering that N.R.C. has to offer — the sort of service that you may expect from us when you explore the new world of high vacuum.

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prompt, intelligent and complete service on all IRC standard products, listed in IRC Catalog #50. They are rapidly gearing to maintain adequate stocks of the most widely-used IRC resistors and their sales forces are conversant with electronic requirements.

When you need resistors in moderate quantities for experimental work, pre-production models, pilot runs, small production runs, and for service and maintenance—it will pay you to call upon your local IRC distributor. We shall be glad to furnish his name upon request.

Write to Dept. 11-E for IRC Catalog #50 and names of local IRC Distributors.

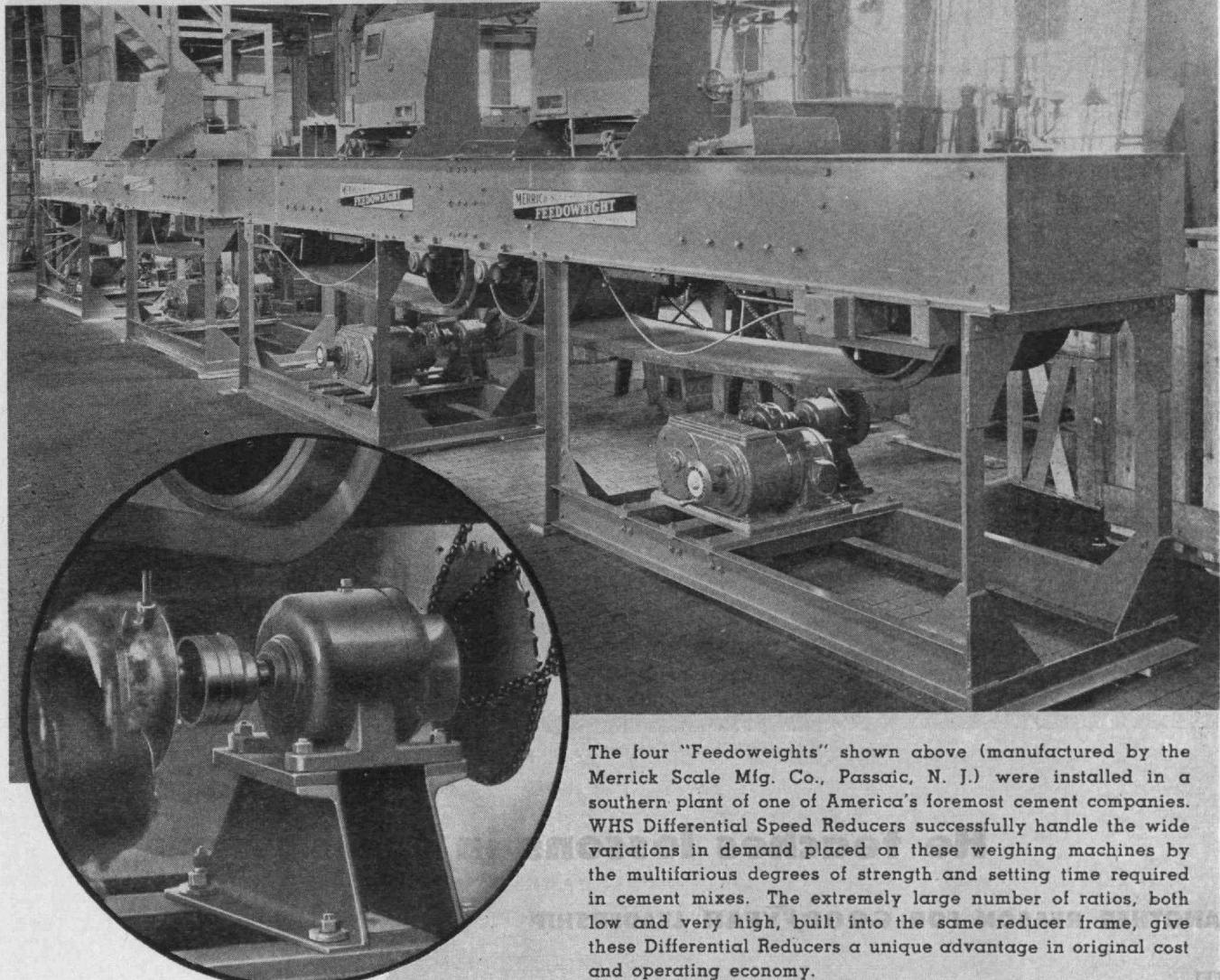
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The two end units feed from 15,000 to 90,000 lbs. per hour of clinker with an input to reducer of 331 to 1990 r.p.m. and a reducer ratio of 147 to 1. The two center units feed from 640 to 3840 lbs. of gypsum with an input to reducer of 213 to 1279 r.p.m. and a ratio of 1527 to 1. In the words of the manufacturer, these WHS Differential Reducers "run exceptionally cool and will tolerate a considerable maintained overload". All four reducers are standard model WHS No. 7H.

Our Catalog No. 145 gives complete information.

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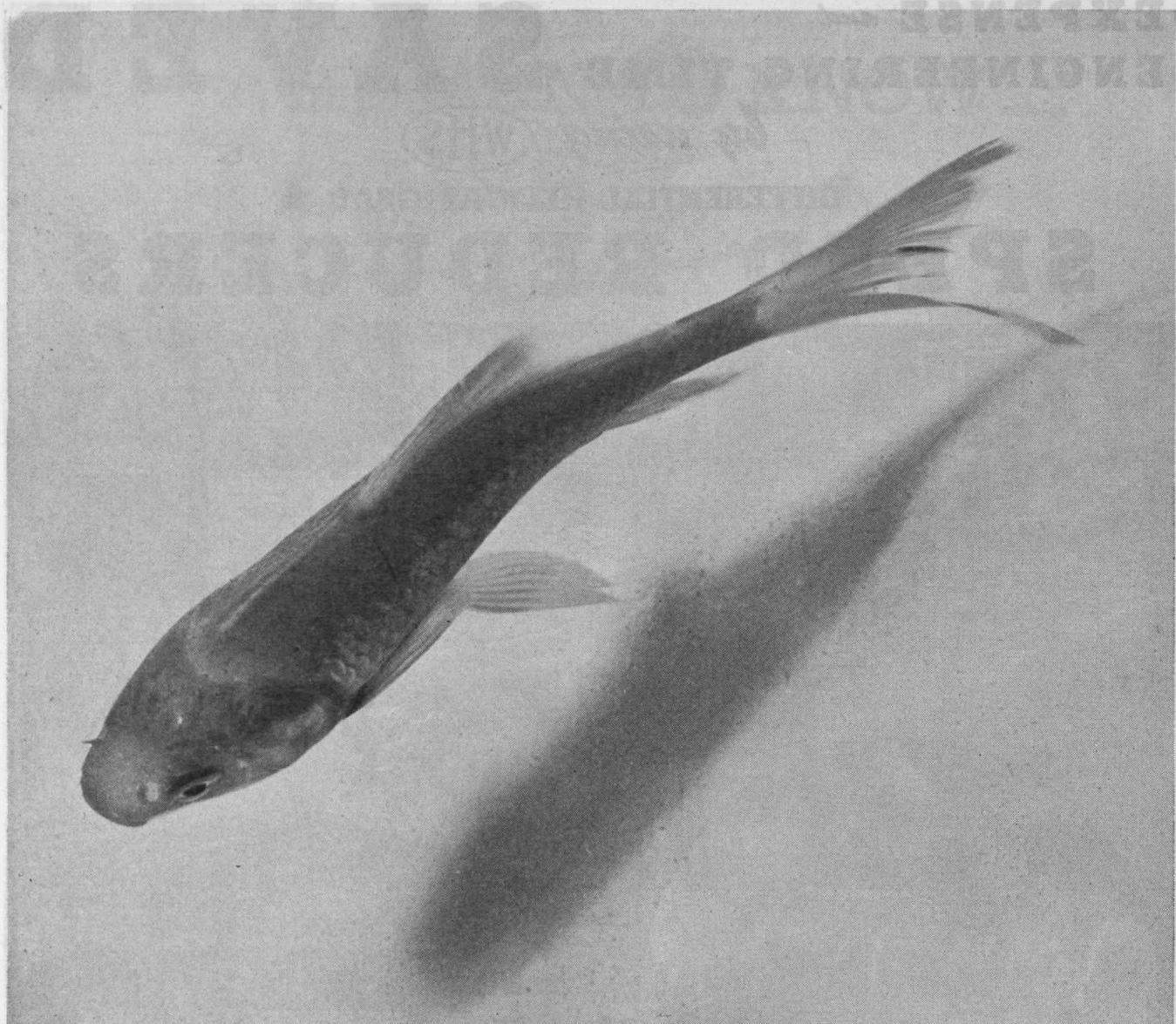


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THE TECHNOLOGY REVIEW

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EDITED

AT THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY



Paul Wiswall '09

Village near Gloucester, England

CONTENTS for MAY, 1946

THE COVER — HARBOR PEACE

From a photograph recently exhibited at the Massachusetts Institute of Technology gallery by Shirley M. Hall

STIRRING SOAP	FRONTISPIECE	414
RECORDING RADAR SIGNALS	BY HERBERT GOLDSTEIN	415
HIGH ROAD TO BROOKLYN: I	BY E. H. CAMERON	419
<i>Represents a Masterpiece of Nineteenth Century Engineering</i>		
INVESTING IN SCIENCE FOR THE FUTURE	BY W. RUPERT MACLAURIN	423
<i>Requires Venture Capital for Building New Industries</i>		
THE SCIENTIST'S SOCIAL RESPONSIBILITY	BY FRANCIS BITTER	427
<i>Lies in Applying the Scientific Method to Social Problems</i>		
☆ ☆ ☆		
THE TABULAR VIEW		402
<i>Contributors and Contributions</i>		
MAIL RETURNS		406
<i>Letters from Review Readers</i>		
THE TREND OF AFFAIRS		415
<i>News of Science and Engineering</i>		
THE INSTITUTE GAZETTE		429
<i>Relating to the Massachusetts Institute of Technology</i>		

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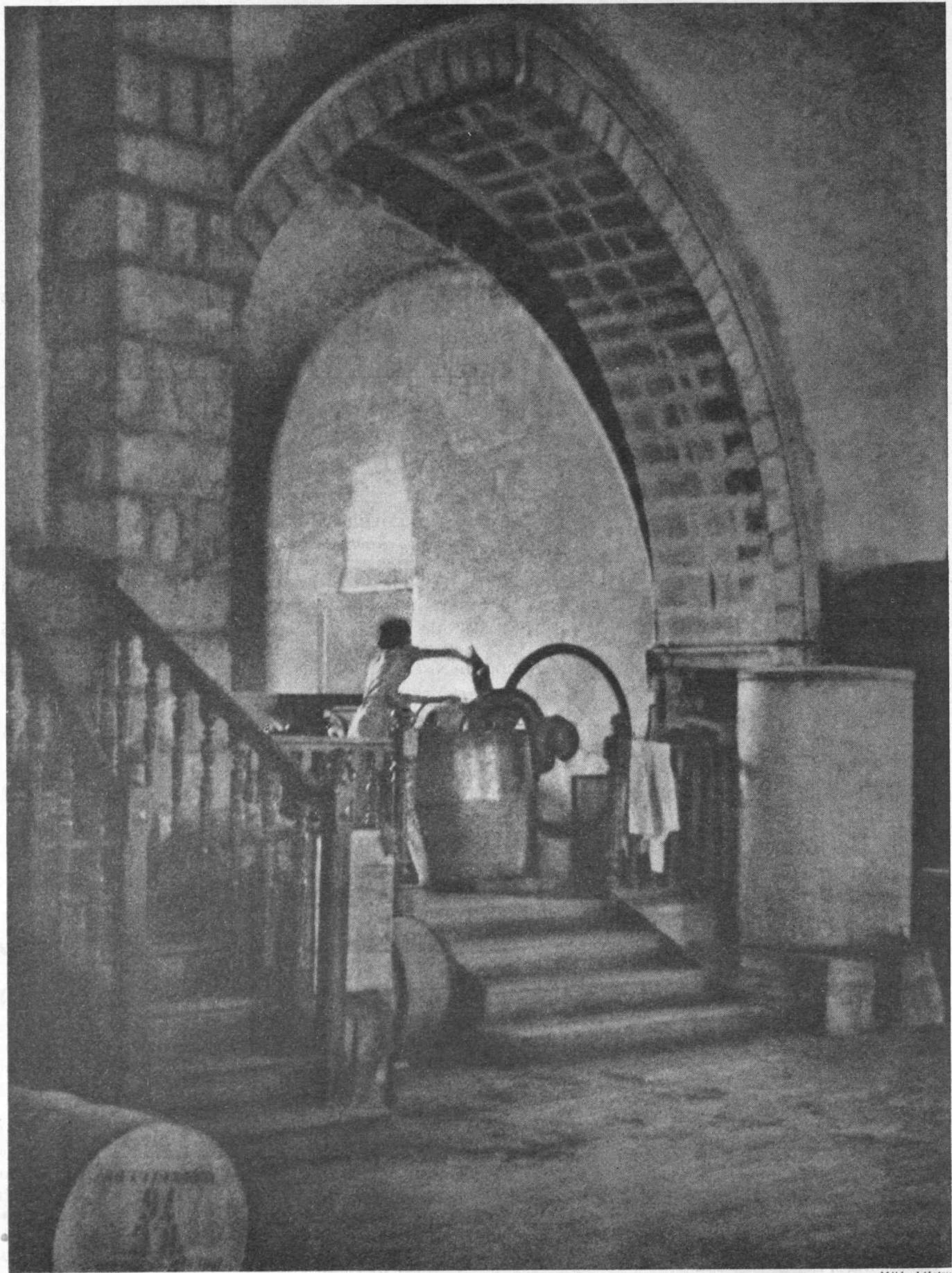
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Stirring Soap

THE TECHNOLOGY REVIEW

Vol. 48, No. 7



May, 1946

The Trend of Affairs

The Badly Beaten Path

AN inspection of Manhattan streets recently led the Automobile Club of New York to complain that holes and ruts had accumulated during the war years to the point where they constituted a threat not merely to the motorist's vehicle but to his life and limb as well. It is no secret that a similar picture of road deterioration can be found on rural and urban roads all over the country. Our primary highways, however, are reported to be standing up quite well.

For four years the United States has had virtually no new road construction, except for war needs, and has carried out only the most urgent of repairs on the existing structures. Considering that normally about 5 per cent of our road mileage requires replacement every year, the damage is less than might be expected. Part of the explanation lies in the fact that between 1930 and 1941 the emphasis was on modernizing and rebuilding roads rather than on extending them. The extensive state highway programs of 1936 to 1941, for example, resulted in a net decrease of 3,500 miles of primary roads. Road programs during the early Thirties, furthermore, were enormously expanded as a governmental aid to employment.

A large backlog of road and bridge construction has accumulated, nevertheless, and exceptionally heavy road programs, some of record size, are being planned by the various states. Federal aid is available at the rate of \$500,000,000 a year for the next three years and for the first time includes assistance to city street programs. Unfortunately, shortages of engineers, labor, and materials, coupled with high prices, have so far acted as a heavy brake on actual work started.

Also of record size are the vacation plans of American motorists facing the first postwar year of unrestricted travel. More than \$6,000,000,000, it is estimated, will be spent for this purpose in 1946. As a yardstick for this figure, it may be pointed out that prior to the war the

total of tolls and gas, excise, and other taxes paid by motorists amounted to about \$2,000,000,000 a year, approximately the normal yearly cost of building and maintaining the nation's 3,309,000 miles of highways.

The automobile has become a basic factor not only in this country's recreational habits (for example, the demand for and use of state and national parks is largely an outgrowth of automobile travel) but also in many more utilitarian functions. Seventy per cent of all workers get to their places of employment by car, and many important plants are not otherwise accessible. About 13,000,000 people find it practical to live in suburban areas beyond the reach of public transportation systems. Of the various trades and professions so far surveyed, the traveling salesman is the heaviest user of the automobile, traveling, on the average, about 18,800 miles a year. Doctors average almost 13,000 miles a year, and the over-all average for all users of cars is about 8,100 miles a year.

It is well-nigh time that we gave thought to replenishing the badly beaten path as merrily we roll along.

Recording Radar Signals

BY HERBERT GOLDSTEIN

ELectrical engineers seeking to protect electric power lines against lightning strokes and other breakdown discharges have long had to study electrical transients, occurring in such discharges, which last only fractions of a microsecond. In a form far less perfect than the now familiar tube of television and radar, the cathode-ray oscilloscope has been used in such studies for more than a generation. Because the time interval under consideration is so short, the electron beam moves rapidly across the fluorescent screen, and it becomes difficult to photograph the trace produced.

Two steps were early taken to increase the maximum beam speed which could be recorded. First, the photographic film was inserted inside the oscilloscope so that

the electrons struck the film directly without an intervening fluorescent screen and camera. Of course, complicated vacuum pumps and locks then became necessary. Second, the electron beam was accelerated by very large potentials — up to 90,000 volts — so that the electrons struck the film with great energy and produced an image even though they moved across the plate rapidly. Beam speeds as fast as 200 feet in one microsecond, one-fifth the speed of light, were recorded in this fashion!

In a high-voltage oscilloscope a correspondingly high signal voltage is needed to deflect the beam. This requirement is of little consequence, of course, to the engineer working with high-tension lines, but it rules out the use of such oscilloscopes by the radio engineer who has only small voltage available. Until recently, however, he had little need for very high-speed recording. When Sir Watson Watt, the "father" of radar, began to study the applications of the low-voltage cathode-ray tube to radio engineering, he reported that the maximum beam speed which he could record was less than one inch per microsecond. At the time, that was quite sufficient.

The situation changed with the intensive development of radar. Not only did the radio frequencies involved mount to astronomical figures, but one became concerned with pulses of energy lasting only a few microseconds or less. Thus a number of high-speed recording problems arose in connection with the work at the Radiation Laboratory. One, the recording of individual cycles of a radio wave having 3×10^9 oscillations per second was solved by a modified form of the high-voltage cathode-ray tube.¹ In another problem it was desired to record the individual radar echoes from each pulse transmitted by the system.² The maximum writing speed needed was not as great, only a few feet per microsecond, but the complications of a vacuum system were to be avoided, and, in addition, the deflecting voltages were necessarily feeble. By combining a number of developments of the immediate pre-war and war periods, it was found possible to record conveniently speeds of a few feet per microsecond using ordinary commercial sealed-off tubes. Photographic films are now available that are several times more sensitive than Super XX. It was found that a fluorescent screen developed for a specialized radar tube gave an image 10 times more brilliant than that previously obtained. Finally, the beam was accelerated by a potential of several thousand volts *after* deflection by the signal voltage, so that relatively low voltages may still be used for deflection while reaping the advantages of a fast electron beam.

The Du Mont Laboratories have recently extended this basic idea, which is several years old, in some special tubes in which the beam is accelerated by 33,000 volts, with deflection sensitivities almost as good as with ordinary tubes. Such tubes can record speeds of many feet per microsecond and bid fair to replace the cumbersome continuously evacuated high-voltage tube.

One problem new to high-speed recording was encountered in the radar work. A radar set will send out a pulse and receive echoes as many as 4,000 times a second. Thus it was necessary not only to photograph the rapidly

moving electron beam but also to repeat the photography 4,000 times in one second. This frame frequency is far above that of ordinary movie cameras (about 16 frames a second), so that it was necessary to modify special high-speed cameras for the purpose. At somewhat lower speeds cameras of the home movie type were used successfully in a much modified form. A phototube, lamp, and slotted disk mounted on the drive motor were used in one of them to "fire" the radar set synchronously with the motion of the film. The resultant reel could then be projected as a movie, and the fluctuations of radar echoes thus could be slowed down to one-twentieth of their normal value for convenient study.

Pellagra Paradox

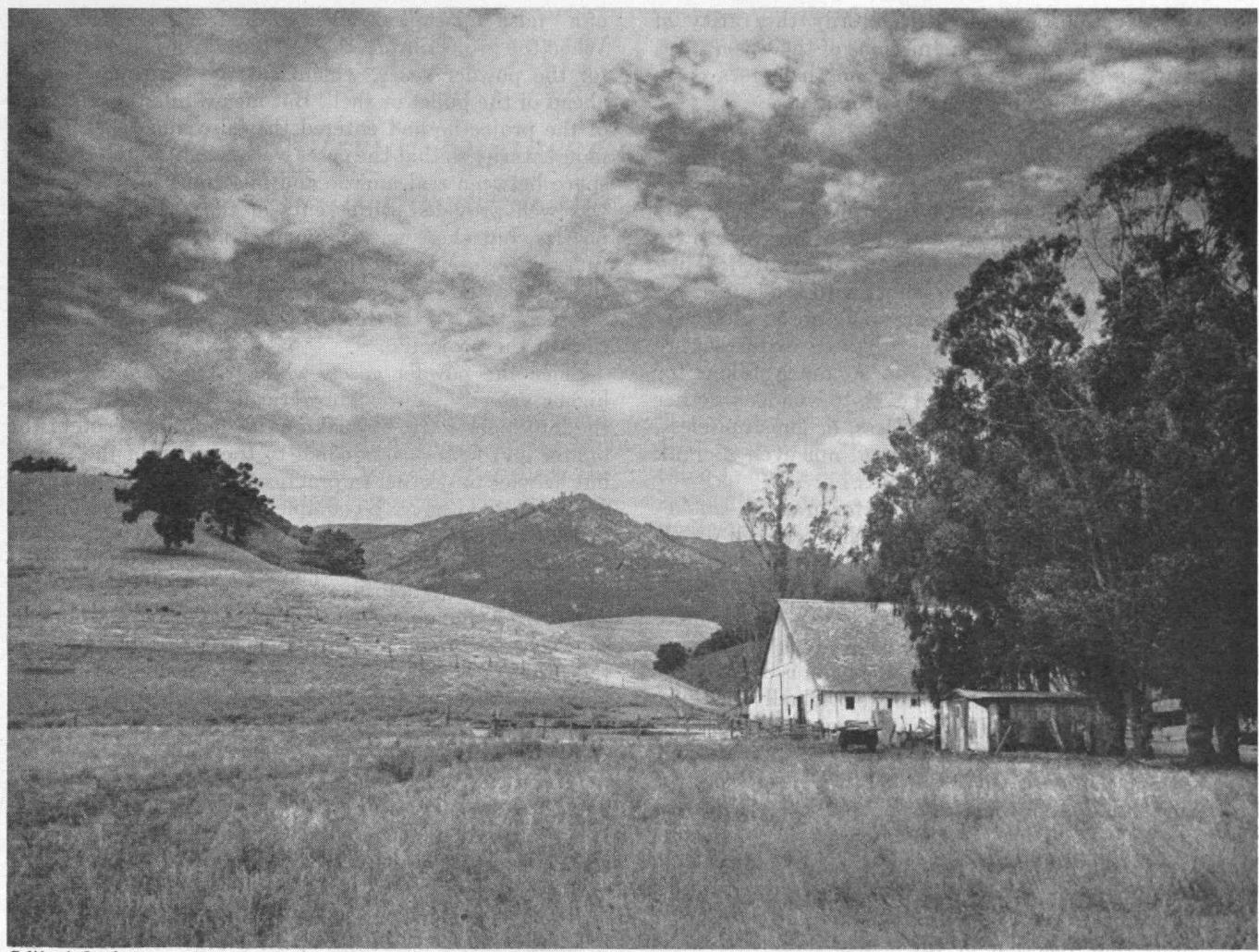
AT the time of Christopher Columbus, peoples dwelling in the central section of the Old World depended upon wheat as their staple cereal food, and the inhabitants of the southeastern part of that hemisphere were similarly dependent upon rice. Before the discovery of America, corn (maize) was the only cereal crop grown in the Western Hemisphere and was an important part of the diet of many American Indian tribes. Today, as of old, wheat retains its predominance in Europe, where vast quantities of this grain are eaten as bread or as alimentary pastes. Likewise, the Orient now, as at the end of the Fifteenth Century, depends upon rice for its staple food. But when white men came to the New World they brought with them the wheat of Europe; this grain quickly displaced the native maize, with the result that now over five times as much wheat as corn is consumed in the United States. But corn consumption here is largely localized in the deep South, where much hominy grits and corn-meal hot breads are eaten. As a result, the per capita consumption of corn in the southern United States is high.

The rice-eating Orient suffers from the scourge of beriberi; pellagra is correspondingly common in the corn-eating southern United States. The United States Public Health Service early concerned itself with the southern pellagra problem and was responsible for Goldberger's classic researches, which in 1920 showed pellagra to be a dietary deficiency disease that may be prevented or cured by liberal consumption of certain protective foods. Search for the specific dietary factor the lack of which causes pellagra was thereupon initiated. These studies culminated in 1937 with the discovery that insufficient intake of the B vitamin niacin produces the most characteristic symptoms of pellagra.

Niacin has a more colorful background than has any other vitamin, first of all because niacin's history exactly reverses that of the other vitamins. The other vitamins were initially recognized through their nutritional effects; then vast quantities of some food identified as a rich source of the particular nutritional factor were processed to extract minute amounts of the vitamin. Finally this isolated natural vitamin was studied by organic chemists for the purpose of determining its chemical structure and in order to make possible the final step, chemical synthesis of the pure vitamin. In contrast, niacin, under its original name, "nicotinic acid," was isolated from the tobacco plant and was identified, catalogued as an organic compound, and successfully synthesized long before vitamins were known. Then, as we have seen, niacin's vitamin character was not recognized until 10

¹ See "Expanded Horizons," by L. A. du Bridge and L. N. Ridenour in *The Review* for November, 1945.

² See "High Speed Photography of the Cathode-Ray Tube," by H. Goldstein and Paul D. Bales, *The Review of Scientific Instruments*, March, 1946, p. 89.



California Landscape

Mildred Hatry

Reminding us of the need for supplying food for a war ravished world is this exhibition print recently shown at the Institute.

years ago. This strange history of niacin underlies the dramatic fact that all the time Goldberger was struggling to solve the riddle of pellagra, at times with little promise of success, a bottle of niacin stood upon the shelves of his laboratory.

The other unique episode in the story of niacin is this vitamin's change of name. This change grew out of the choice of niacin, along with its fellow B vitamins, thiamine and riboflavin, for addition to flour and bread in the most significant nutritional reform of our times, the food enrichment program. When the time came for declaration of nicotinic acid on the labels of enriched bread and flour, it was realized that to the layman nicotinic acid, as an ingredient of foods, suffered from the double stigma of association with tobacco and acidity. Hence, by agreement of scientific and governmental authorities, nicotinic acid was rechristened "niacin."

Although the dietary deficiency nature of pellagra was thoroughly established a quarter of a century ago, and although a specific preventive factor was later identified in niacin, one aspect of the pellagra problem has challenged explanation. This paradox of pellagra is: Why is pellagra found mainly among populations consuming large amounts of corn? Niacin shortage of high corn diets is not the whole answer, for niacin intake of certain of the rice-consuming peoples of India has been shown to be below that of pellagrins in this country, yet pellagra is

rare in India. Likewise it was demonstrated in 1942 that the average niacin intake of residents of Wayne County, N. C., a section where corn consumption is low and pellagra is unknown, was exactly the same as the calculated niacin level of the high corn diets consumed by the subjects in Goldberger's classic studies, yet Goldberger's subjects were pellagrins.

From these observations it follows that corn must have some positive pellagra-generating effect, aside from its deficiency in niacin. The existence of such a relationship has, in fact, been proven by experiments with laboratory animals. Then certain of these experiments were extended to yield at least a partial answer to the paradox, for they showed that corn has a specific anti-niacin effect and that this effect may be offset by the liberal addition to the diet of casein, a protein of milk. Later the protective value of casein in high corn diets was narrowed down to one of this protein's component amino acids, tryptophan. Since tryptophan is poorly supplied by corn, it now becomes clear that high corn diets may produce pellagra through a dual deficiency of the vitamin niacin and of the amino acid tryptophan. The mechanism of the relationship has not been explained experimentally, although a published theory postulates that ample dietary tryptophan may support growth, in the intestinal tract, of micro-organisms capable of synthesizing niacin, thus compensating for a shortage of niacin in the dietary intake.

These observations explain satisfactorily the rarity of pellagra among the rice-eating millions of the Orient, for, although rice contains even less niacin than does corn, rice contains considerably more tryptophan.

Recoilless Guns

EVER since the invention of firearms, some 600 years ago, it had been proverbial that a gun had three characteristics which were completely unwanted: They belched huge clouds of powder smoke into the landscape, they made an unholy (and betraying) noise, and they kicked back. Although all three of these features were unwanted, their inevitability was so much taken for granted that anybody who dared even to wonder whether powder might not be made smokeless, or guns noiseless, was considered a hopeless crank. And not even a crank would think of making guns recoilless.

By now we take smokeless powder for granted, smokeless at least by comparison with the smokescreen developed by batteries and battalions firing the old-fashioned black powder; and although noise reduction is actually very difficult and has not been carried very far, we have had recoilless guns for quite some time.

The first attempt to build a recoilless gun is exemplified by the Davis nonrecoil gun of 1917, originally planned as an airplane cannon. The Davis nonrecoil gun took advantage of Sir Isaac Newton's third law of motion, stating that reaction is equal (in power) but opposite (in direction) to action, or the actions of two bodies are equal (in power) but point in opposite directions. Applied to a firing gun this law made it clear that the recoil of the gun was simply the reaction of the whole piece against the firing of the projectile.

At first, that reaction of the whole piece had been restrained merely by ropes; then designers had created special recoil-absorbing mechanisms, consisting of cylinders and pistons moving against springs or liquids, or both. The Davis gun was the result of the thought of providing a special "recoil mass" which would take up the reaction for the gun. Consequently, the cartridge was made to consist of three instead of two parts: the projectile proper, the propelling charge, and the recoil-mass, a cardboard container filled with buckshot. This cartridge was inserted in the middle of a long barrel of 2.25-inch caliber.

The front section of this barrel was rifled, the rear section was smoothbore. When the projectile was fired, the two masses, projectile in front and buckshot container in back, produced two mutually neutralizing reactions in opposite directions, so that the gun itself did not move at all. The cardboard container broke up when fired, so that the buckshot, finding a much higher aggregate air resistance than the single projectile, did not have a long range. The danger area behind the original nonrecoil gun was only about 200 yards long, and it would have been easy to provide a backstop for the buckshot if this gun had been used on the ground.

But after World War I another solution of the recoil problem, developed originally by the engineers of Schneider-Creusot, gained greater currency at first. The Creusot engineers had utilized the fact that the powder gases which leave the muzzle of a gun after the projectile has left it are from two to three times as fast as the projectile. The mechanism utilizing this feature consisted essentially

of a "false muzzle" attached to the front end of the gun. When the projectile left the real muzzle it opened the way for the powder gases, which had the tendency to race ahead of the bullet or shell. But meanwhile the front end of the projectile had entered the false muzzle, sealing it momentarily so that the gases were caught in the enclosed space between real muzzle and false muzzle. That space was well provided with vents in the shape of exhaust nozzles, but these nozzles pointed in the opposite direction. Therefore, while the gun barrel was just about to slide backwards under the recoil from the projectile, it was arrested by the recoil of the gases which opposed that of the projectile.

Since the powder gases, while lesser in mass, had a higher velocity, it was theoretically possible to balance the forces perfectly, by making the opposing recoil of the lighter and faster gases equal to the recoil of the slower but heavier projectile. In practice, however, this theoretical ideal could never be completely attained; the muzzle brake as a rule reduced the recoil appreciably so that the remainder could be taken up by a much lighter and smaller recoil mechanism.

But even though ordnance departments of all countries showed a pronounced infatuation for the muzzle brake, the other idea was not completely neglected. After the victory in North Africa a German recoilless howitzer of the Davis nonrecoil gun type was found; it had a caliber of 105 millimeters (about four inches) and was backed by a sand wall which was to catch the recoil-absorbing buckshot.

Naturally it was also possible to do without the buckshot and create a counter recoil merely by permitting part of the powder gases to escape in the rear and by utilizing it properly. It has now been revealed that our Ordnance Department has spent a considerable amount of work on the perfection of that thought so that the American forces are now in possession of several types of recoilless guns of amazing characteristics.

One of them is a 57-millimeter cannon, firing $2\frac{1}{4}$ -pound artillery projectiles to a maximum range of two and a half miles. An ordinary 57-millimeter cannon would weigh around 3,000 pounds; the recoilless type weighs 45 pounds, and it can be fired from the shoulder like a rifle, with which it compares in accuracy.

A 75-millimeter recoilless gun weighs about 110 pounds (even the little 75-millimeter pack howitzer, the lightest artillery piece in existence so far, weighed 14 times as much) and can be fired from a tripod mount, which is not larger or heavier than the tripod mount ordinarily used for machine guns.

Such recoilless artillery will provide the infantry regiment of today with more fire power than the artillery regiment of yesterday could muster. Needless to say, such portable recoilless artillery is again much superior to the portable rocket launchers which substituted for the then nonexistent portable artillery. The projectile from a portable gun is far superior not only in accuracy to any rocket shell but also in range and in penetration. And although the firing tubes of recoilless artillery are necessarily heavier than the launching tubes of rocket projectors of the same caliber, the weight of a round of ammunition is apt to be less, since the powder charge required to launch a projectile from a tube is much lighter than the powder charge of a rocket for a projectile of the same weight!

High Road to Brooklyn

*The Half Century of Engineering Progress Since Its Completion
Serves Merely to Heighten the Respect with Which We Regard
Those Who Planned and Constructed the Brooklyn Bridge*

BY E. H. CAMERON

I

THE typical bridge engineer is an uneasy fellow who is never content with present methods. He strives constantly to advance the outposts that mark the frontier of engineering design — assumptions that are more truly rational as to loads and their distribution, more precise methods of stress analysis that are not too cumbersome mathematically, and, above all, the adoption of new materials which promise savings in both dollars and weight. He is happiest when his courageous advances allow him to build a structure of hitherto unheard-of size. From this fine quality of discontent with the old, coupled with an eagerness to build something bigger still, arises the high respect, bordering on reverence, in which modern bridge engineers hold the conceiver of the Brooklyn Bridge, John August Roebling, and his associates who built this inspiring structure after his untimely death. For these men created a structure wherein pioneer materials were used to construct members of such unusual dimensions that the Bridge was called the "eighth wonder of the world" when completed in 1883, after 13 years of arduous construction activity.

Many rule-of-thumb methods were used in computing the sizes of cables, anchorages, and other bridge members. At the same time, common sense was so skillfully applied to the meager theories of structural design of the period that modern designers of suspension bridges concur in their respect for the ability exhibited by John A. Roebling in his attack on the basic problems of a bridge of this type.

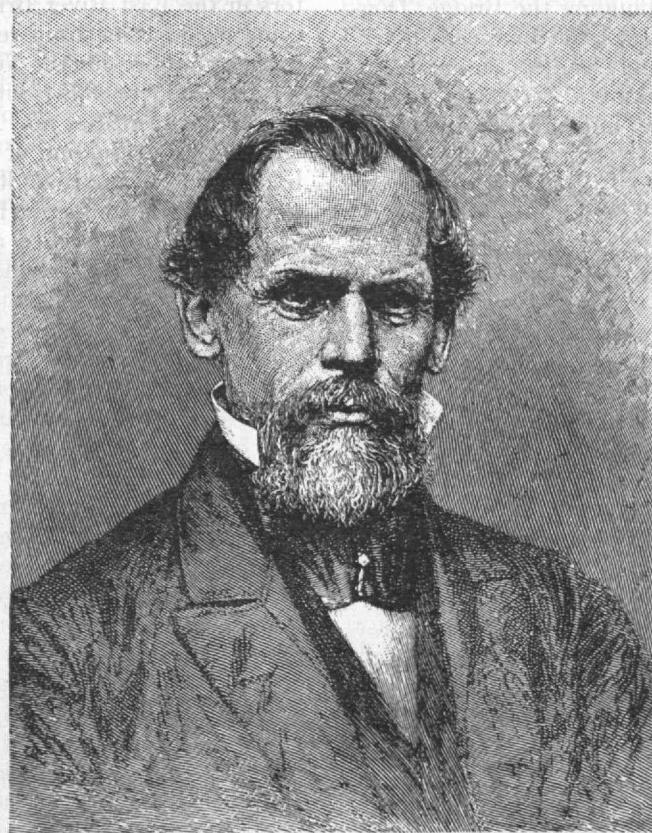
The Brooklyn Bridge was built the hard way. Large quantities of candles were

used to light its caissons fathoms beneath the surface of the East River.¹ There were no electric motors for hoists or cable-spinning apparatus, no telephone systems or flashing signal lights, no safety nets or man-tramways. Nevertheless, the construction processes were so basically sound that much of the machine-operated apparatus used by modern suspension bridge builders has as its prototype the crude, often hand-driven devices used by the builders of the Brooklyn Bridge.

The Historical Setting

The Pacific Railroads had just been completed. The effect of this outstanding engineering and economic venture of the period on the growth of New York City had been stressed by John A. Roebling in his promotion of the East River Bridge, as the Brooklyn Bridge was first called.

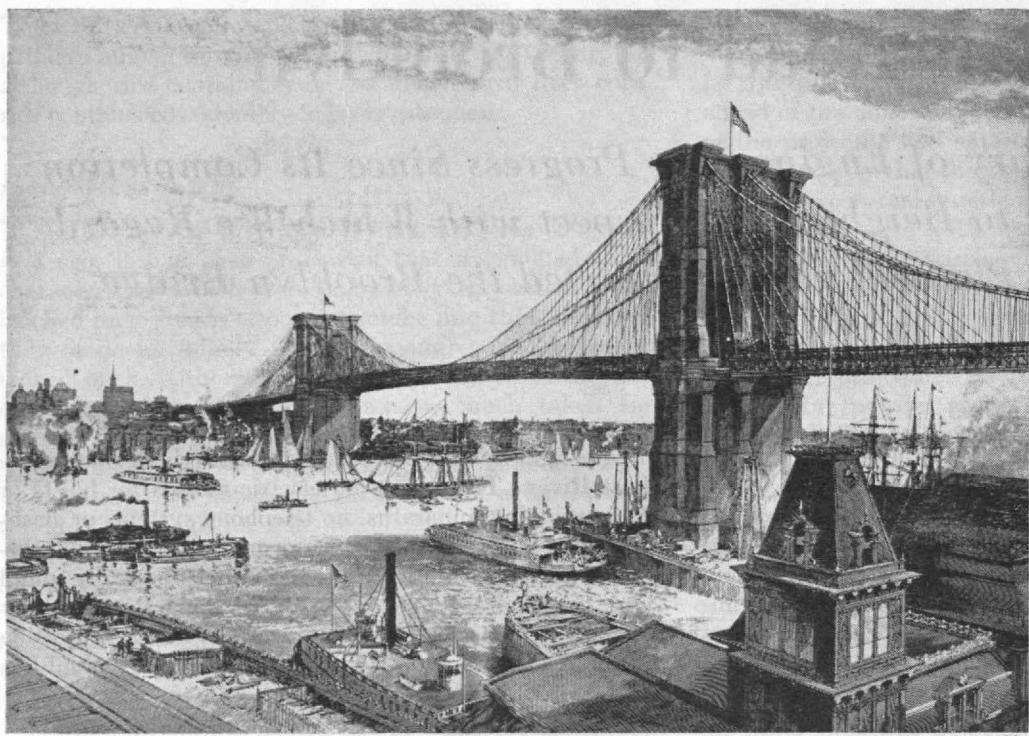
As they ate their lunch in the Bridge's noisome caissons, the builders undoubtedly rejoiced that Boss Tweed was at last headed for jail and deplored the fact that some persons had coupled Tweed's name with their East River Bridge. They talked of a device that would relieve folks of writing their business letters in longhand: the typewriting machine. Some of them went to the Centennial Exposition at Philadelphia in the year when the cable-spinning apparatus was started on the Bridge, and there they watched Alexander Graham Bell exhibit his pioneer telephone. Frequently they read of Indian raids in the Great West. These bearded young bridge builders must have grieved at the assassination of President Garfield, which occurred about the time that the floor system of the Bridge was erected. Proudly they watched Garfield's successor, President Chester A. Arthur, lead the procession



Harper's New Monthly Magazine

Relentless in his exacting energy, John August Roebling was a hard but inspiring taskmaster. After his untimely death his associates did him the highest honor possible by completing the Brooklyn Bridge according to his high standards.

¹ The bill for candles at the Brooklyn caisson was about \$2,500, more than half the total cost of the calcium, candles, and gas for caisson lighting, exclusive of apparatus.



Harper's Weekly

Forty million East River ferry tolls were collected annually at the time the Bridge charter was granted. A map published when the Bridge was completed shows 15 ferry lines; and 100 various craft an hour crossed the line of the Bridge during the cable-spinning operations. It was a busy East River.

of notables across the completed Bridge in 1883.

Exciting political events and outstanding inventions thus marked this period of virile American expansion — the 16 years of planning and building the Bridge. Doggedly its builders kept at their tasks, too fanatically determined to complete this seemingly endless enterprise to realize that they, too, were making history — of a quality that would inspire bridge builders of succeeding generations.

The Characters

Of the nine Bridge engineers whose names appear on the tablet of the weathered Brooklyn tower, only the three principal executives need be mentioned here: John August Roebling, his son, Colonel Washington Augustus Roebling, and Charles Cyril Martin.

John August Roebling was a bitterly brilliant personality, an immigrant from Thuringia, who had invented wire rope and then established a thriving business in its manufacture. He was, as well, a pioneer builder of American suspension bridges, and when appointed chief engineer of the East River Bridge in the year 1867, he was recognized as the country's most eminent bridge builder. To his credit were structures of the novel Roebling type at Pittsburgh, Cincinnati, and Niagara Falls, but the East River Bridge was to be his masterpiece! The basic design was his, but an accident before actual construction was started caused his death. His son, Washington Roebling, was appointed chief engineer and saw the completion of the Bridge which his father had planned.

One of America's dramatic sagas is the story of how the younger Roebling (during his invalidism which resulted from caisson disease incurred on the work) followed the Bridge construction from his bedroom window by telescopic observations with the help of his wife (the sister of his Civil War commander, Major General G. K. Warren).

His reports during his sickness are models of engineering good judgment, but the active construction must be credited to his assistants, and particularly to Charles C. Martin, the principal assistant.

Martin had the unique record of 33 years of activity on the Brooklyn Bridge: first during its building, then as chief engineer and superintendent, and later as consulting engineer of the Department of Bridges, New York City. Vice-president of the American Society of Civil Engineers and the recipient of a unanimous vote of the alumni of Rensselaer Polytechnic Institute to be head of that college, which honor he declined, Martin chose to remain associated with the Brooklyn Bridge until his death.

The Economics of the Bridge

John A. Roebling promised handsome profits to investors in the East River Bridge project. One source of income would come from rental of treasury vaults which could be built within the New York anchorages and which would "soon be filled with three-fourths of all investments and securities now held in this country." The increase in the valuation of Brooklyn real estate due to a bridge would amortize its construction cost in three years, he said. Competing for funds in a time when American speculation reached a peak, clever promoter John A. Roebling made superlative claims. History shows even his most extravagant claims to have been understated, for few public enterprises have paid off as handsomely.

A comparison of the Brooklyn Bridge toll schedule of 1884 with that of the George Washington Bridge nearly half a century later gives an indication of bridge revenues and, incidentally, provides an insight into transportation habits of the times.

Horse-drawn vehicles and the cable-car railroad provided the prime source of revenue for the Brooklyn Bridge; automobiles are the largest source of revenue for the George Washington Bridge. The present toll for pedestrians is 10 times that for the foot passengers of six decades ago. This comparison is of little significance in indicating the revenue from pedestrians, for two reasons: As a result of increased prices and wages, the dollar has much less purchasing value now than it had then. As an example of the general increase in wages over the past half century it is interesting to note that bricklayers in New York City receive about four times the hourly rate they did in 1884. Furthermore, tolls from foot traffic are a small part of the income for the George Washington Bridge, whereas the popular promenade of the Brooklyn Bridge had tremendous traffic.

COMPARATIVE TOLL SCHEDULES

Brooklyn Bridge (1884)

Foot passengers.....	1 cent
Railroad fare.....	5 cents
One horse, or horse and man.....	3 cents
One horse and vehicle.....	5 cents
Two horses and vehicle.....	10 cents
Additional horses, each.....	3 cents
Neat cattle, each.....	5 cents
Sheep and hogs, each.....	2 cents

George Washington Bridge (1931)

Pedestrians.....	\$0.10
Passenger Automobiles and	
Horse-drawn vehicles.....	0.50 to \$0.70
Trucks.....	0.50 to 1.00
Tractors.....	1.25 to 1.50
Busses.....	1.00 to 1.10

Roebling was the first successful promoter of a bridge to Manhattan, if we except the narrow Harlem River crossings. With the Civil War only two years in the past, Roebling naturally stressed the military value of the Bridge in case of war.

Having proved at Niagara Falls that a suspension structure could be made sufficiently rigid to carry railroad trains, Roebling featured a cable-propelled railroad for his East River Bridge. Bridge railroad service to Manhattan is now considered of secondary importance, but the George Washington Bridge has provision for a future, lower railroad deck. The East River ice hazards made competition from the ferries negligible. Competition from tunnels, which finally relieved the overcrowded Brooklyn Bridge in 1908, Roebling treated rather nonchalantly. Tunnels would come ultimately for the transportation of freight, but they would be immensely costly, he predicted. Uncanny prescience on Roebling's part, envisioning the automobile, however, would have been required to have had him make his Bridge traffic lanes of the 20-foot width of those of the Holland Tunnel, instead of their actual width, 16 ft. 9 in.

Roebling's studies of an artery to relieve the traffic of Manhattan Island, with a population approaching 1,000,000, guided later traffic studies for more and more arteries to keep pace with the expansion of the metropolis. He considered the northerly movement of New York traffic in his alternate Bowery-Canal route, which would have terminated where the Manhattan Bridge now ends. The northerly progress of traffic was later emphasized in the schemes for a Hudson River Bridge, which, although authorized only one year later than the East River Bridge (1868), was to wait for more than 60 years before its consummation at the George Washington Bridge crossing at 178th and 179th streets.

Considering the slow tempo of the horse-drawn traffic of Roebling's time, it is obvious that he could not envision the problems and costs of bridge approaches which would still be adequate half a century later. Today, the approaches to a large bridge

require a high order of planning and design and may cost more than the bridge itself.

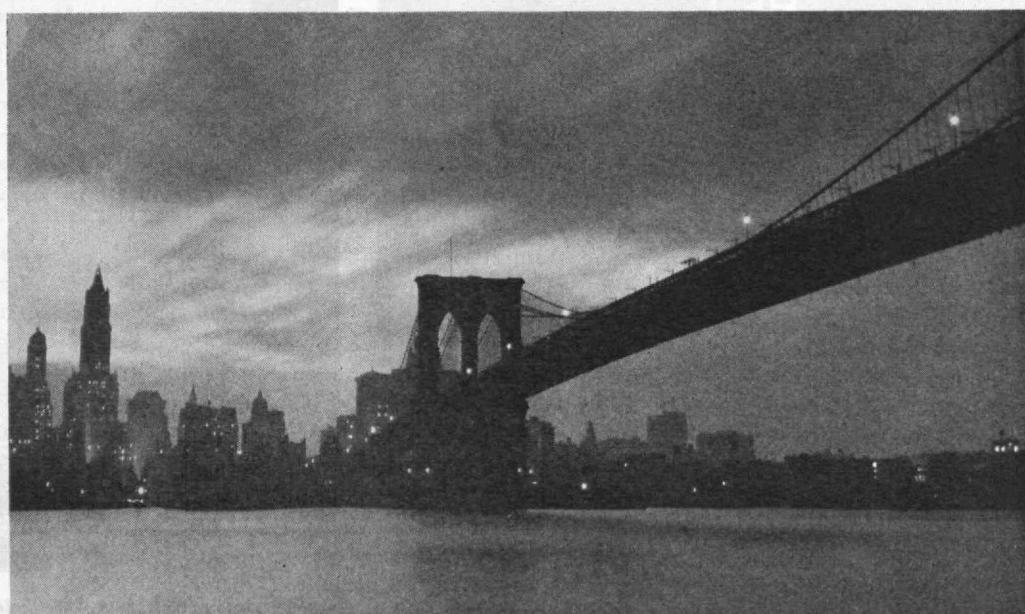
Correctly, Roebling expected heavy traffic on the promenade of the Bridge. The later acquired experience of the crowd-conscious New York police was needed to indicate that steps on the promenade were a serious safety hazard. The Bridge trustees were "reprehensible," according to the coroner in the case of the tragic panic at the New York steps of the promenade, in which 12 persons were crushed to death about a week after the opening of the Bridge.

We may pass over the alternate designs for various elements of the Bridge — cantilever construction versus a suspension span, steel versus wrought iron, wire cables versus bar links — by quoting Roebling's way of settling such problems: "We want the greatest amount of strength for the least amount of money. . . ."

Bridge Design, Circa 1870

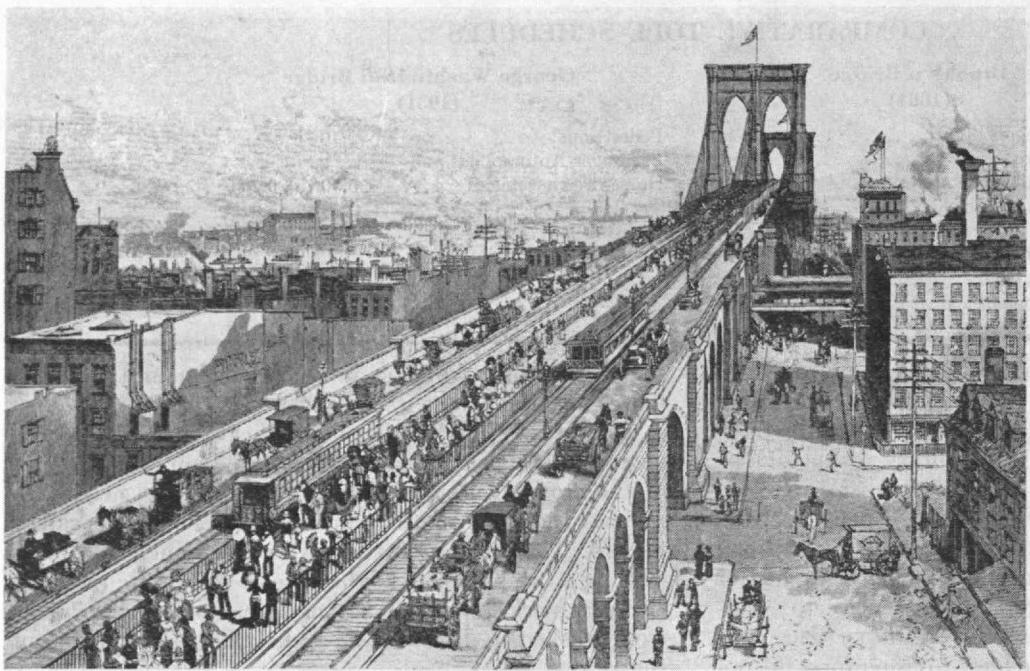
We can readily understand the doubt which many expressed as to the safety of the Bridge when we consider the status of suspension bridge design and the small number of suspension bridges in use in the post-Civil War period.

Roebling's greatest contribution lies in his conception of a rigid type of suspension structure, suitable even for railroad trains, and his ability to devise methods of building such a structure. Within one generation the art of sus-



Museum of Modern Art, New York. Photo by Russell Griswold

Structures become out of date quickly in New York City, and millions of dollars are sacrificed to the factor of obsolescence. But old Brooklyn Bridge is by no means out of date; it is still an important traffic artery. The city's postwar plans will preserve the utility as well as the beauty of the Bridge.



Harper's Weekly

The New York approach on opening week. Horses and wagons made up most of the bridge traffic, and shouts and horsewhip gestures signified the drivers' intentions. Bridge trustees had set the vehicular speed limit at four miles an hour.

pension bridge design progressed more than in the previous millennium.

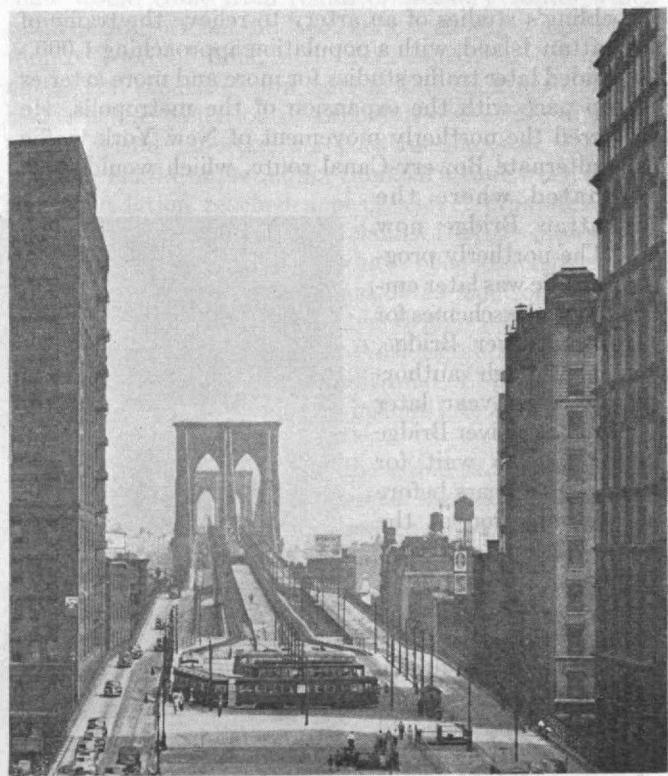
Today's suspension bridges, now pre-empting the field of long-span construction, do not depart materially from the basic features of the Roebling bridge at Brooklyn. Anchored cables pass over towers and support the bridge floor system by hanging wire ropes. Unsafe vibratory effects are avoided by bridge proportions that, when successful, do not differ markedly from those of Roebling. Roebling's achievement is apparent when we consider three factors: the status of the theoretical knowledge of structural design of the Nineteenth Century, the degree to which practical designers were versed in this knowledge, and the limited knowledge of the properties of the materials which he and his successors courageously adopted.

We must not sneer at the theoretical knowledge of structural design in Roebling's time. The rational column theories of Rankine and Euler were available, likewise the equation of the elastic curve of a beam in flexure and the resultant stresses in tension, compression, and shear. It was also known that certain arrangements of members were statically determinate, others indeterminate. It was a far cry, however, from the wide scope of the knowledge that a modern engineer must possess, forsaking guess-work, if his design of a suspension bridge is to consider rationally all the load effects. The engineer of today must understand aerodynamics and vibration analysis, he must possess the mathematical facility to investigate them, and he is coming to appreciate the desirability of scale model wind tunnel tests.

John A. Roebling was versed in the theories of his day, but his successors, who had to evolve the details of his conceptions, gave evidence that they did not possess the facility of the master. They were ingenious, however, and recognized today's basic principles of design, provided for factors of safety, and gave more weight to the elastic limit than to the ultimate strength of their materials.

As to the properties of the new steels — open hearth and Bessemer — we need merely read of the tests that these men devised to agree that their guesses were empirically sound because of their well-planned and well-executed methods of substantiation. Today, the designer has generations of tests back of most of the materials that he uses; then, the designer had to test as he went along.

Like today's designers, the Bridge engineers assumed magnitudes for and the distribution of loads and then selected members to carry them. The details of their Bridge prove their conservatism. First, in the matter of rigidity, horse sense prompted both Roeblings, father and son, to adopt a safe arrangement. Their reports discuss with engineering appreciation the effects of vibration due to moving loads and wind. The recent impressive studies of the aerodynamic stability of suspension structures give ample realization of the need of a rational analysis of such effects, if (Continued on page 450)



New York Sun

New Yorkers can now view their old Bridge, unmarred by the hideous terminal which was recently torn down. At each end, Roebling's Bridge concentrated enormous crowds within small areas, until the subway to Borough Hall in Brooklyn in 1908 relieved most of the traffic congestion.

Investing in Science for the Future

New Sources of Venture Capital Extend Opportunities to Build Industries Based on Scientific Discoveries and Encourage Research Workers to Leave the Beaten Path

BY W. RUPERT MACLAURIN

OUR scientists today face the future with great confidence. They believe that over the years ahead a series of important discoveries will pour out of our American universities and will give rise to a host of possible new industrial developments. Given the proper backing, they predict that within 10 years they can harness atomic energy for important peacetime objectives; and they suggest that this is only one example of a series of revolutionary scientific developments which may occur. If these forecasts prove correct, there will be many new scientific industries which will be started in the future as a direct outgrowth of advances in science.

The future can be discussed with more confidence if we understand how past developments have occurred. By using radio as a case study, I should like, therefore, to illustrate the steps which are required to bring a new scientific concept from the theoretical stage to a successful commercial product.

The pioneers of the radio industry were university scientists. Marconi has often been referred to as the father of wireless. This is not the case. James Clerk Maxwell, a mathematical physicist at the University of Cambridge, foresaw, 80 years ago, that wireless waves could be produced, and he gave the complete theory of their generation and propagation long before their existence had been suspected. About 20 years later, another scientist, Professor Heinrich Rudolf Hertz of the University of Bonn, first proved experimentally that electromagnetic waves could be detected through space. He designed a spark-gap oscillator which would generate wireless waves, a metallic mirror for reflecting them, and a loop type of antenna for detecting them. By such means he was able to send and receive signals from one end of his laboratory to the other without an interconnecting wire.

Following Hertz, scientists in various countries turned their attention to the study of wireless communication. But none of these early pioneers were consciously thinking about commercial developments. Their interest was in experimenting with the transmission and reception of magnetic waves through space because this was a new phenomenon of nature which was not yet fully understood.

The other key scientific discovery on which modern radio is based is the thermionic vacuum tube. Thermionic emission of electrons was explored originally as a separate problem of physics with no thought of its ultimate value for the detection of electromagnetic waves. Here there was a very similar course of development in that there was a period of several decades of purely scientific research of a type that would be exceedingly hard to describe as of any practical use. This research came to a climax with the work at the University of Cambridge of J. J. Thomson and especially of his pupil, O. W. Richardson, who finally

worked out the theory of thermionic emission of electrons from hot filaments and correlated this emission with the temperature and the physical characteristics of the filament. It was on top of this scientific work that De Forest introduced his three-electrode vacuum tube as a wireless detector.

In the story of the process of technological development in the radio industry, there was a clear-cut division of labor between the university physicist and the commercially-minded inventor, who came later. We might note in passing that very few patents were taken out by the university scientists. A new principle of nature is not patentable. Patents cover methods of achieving a particular result. When, therefore, Marconi, the inventor, set to work to build a commercially practical system of wireless communication, he was able to obtain basic patents on most of his developments.

This was the era of the independent inventor. The courts were very generous in granting patents, and advanced scientific training in physics and electricity was not required to make really important contributions.

Without the pioneer work of the university physicist, the practical development of radio communications would have been impossible. Marconi himself did not have the

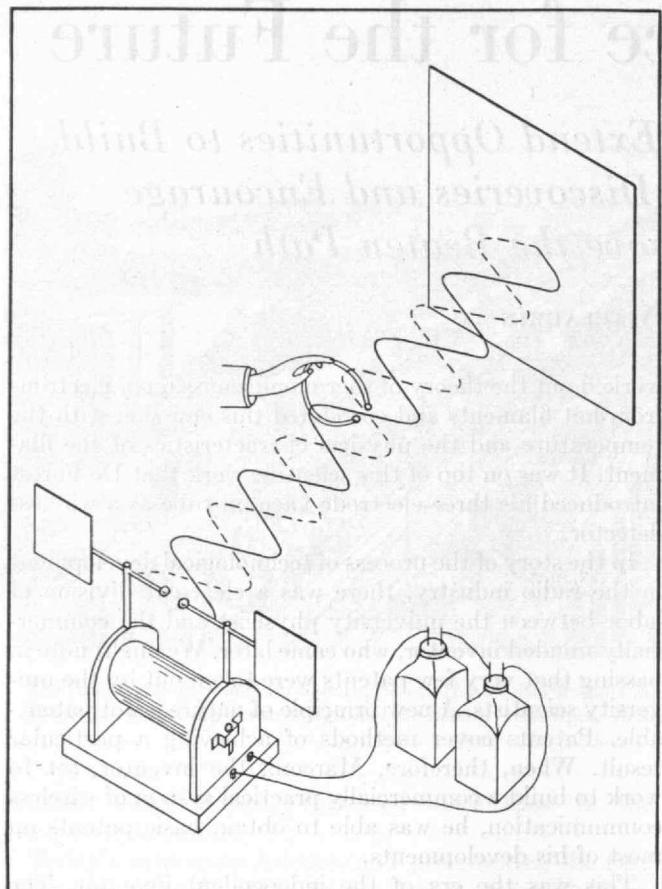
$$\nabla \times E = -\frac{1}{c} \frac{dB}{dt}$$

$$\nabla \times B = \frac{\mu}{c} \left(4\pi i + \frac{dD}{dt} \right)$$

$$\nabla \cdot D = 4\pi\rho$$

$$\nabla \cdot B = 0$$

James Clerk Maxwell, Britain's brilliant mathematical physicist, evolved (about the time of the Civil War) the set of electrical equations (above) bearing his name, based on the experimental work of Ampère, Henry, Faraday, and others. The solution of these differential equations led Maxwell to predict the properties of electromagnetic waves long before their existence was suspected. Thus, our present radio industry has its roots firmly planted in intellectual abstractions.



Heinrich Hertz, German experimental physicist, produced and observed the behavior of electromagnetic waves some two decades after Maxwell's theoretical predictions. In so doing, Hertz not only verified Maxwell's earlier work but discovered means for physically creating the waves which are the heart of radio communication.

background in experimental physics which would have led him to make the discoveries of Hertz. His main scientific contribution was in improving the laboratory type apparatus of his predecessors and making it perform much more consistently. But in terms of practical value to society, this contribution was enormously important.

It is interesting, also, to examine historically the role that established industry played in bridging the gap between the fundamental discoveries made in a university environment and the commercial development of radio. The electrical industry was well organized at the turn of the century when Marconi launched the first radio companies in the world in England and the United States. The American Telephone and Telegraph Company was already an important concern. Western Union and Postal Telegraph had telegraph lines throughout the United States and cable connections abroad. The development of wireless communications was obviously a potential threat to the interests of these companies, particularly to the international cable system. Yet the communication companies made no outstanding contributions to wireless in the early years, and the same can be said of the important electrical manufacturing enterprises at the time. These various companies had their own fields of interest. A new and highly speculative development such as wireless had very little appeal.

What role did venture capital play in launching the radio industry in this country? The three most important early American concerns were the American Marconi

Company, the National Electric Signalling Company (Nesco), and the De Forest Wireless Telegraph Company. The American Marconi Company was financed by investment bankers in England and the United States; its stock was largely privately subscribed and held in large blocks. NESCO, financed entirely by two wealthy Pittsburgh capitalists, conducted the first experiments made by any commercial company on the wireless telephone. The De Forest Wireless Telegraph Company, stock in which was sold by high-pressure salesmanship methods as an out-and-out speculation, later went into receivership; but its principal inventor, Lee de Forest, made one of the most revolutionary inventions of the last 50 years — the three-element vacuum tube. Very few of our modern developments in electronics would have been possible without De Forest's historic discovery of the tremendous increase in sensitivity that can be obtained by introducing a third element between the cathode and the anode of a vacuum tube.

These three companies, therefore, were financed with different types of capital: American Marconi with investment money, NESCO with long-term speculation money of wealthy individuals, and De Forest's company with "get-rich-quick" money from many small investors. The Marconi investment ultimately proved very profitable, NESCO broke even, and De Forest failed. The fact that all types of capital were readily available for financing new ventures contributed materially to advancing radio technology.

Not only inventive talent and venture capital were needed for the success of these new scientific enterprises, but also managerial skill. De Forest's vacuum tube was more revolutionary in its ultimate impact than any invention of Marconi's, but Marconi had the help of the best business advice that could be obtained. When, as usual in such new enterprises, difficulties occurred, the directors brought in a business executive of outstanding ability, who took over the responsibility of management, leaving Marconi free to concentrate on research.

Several points may be stressed in this story of the early technological development of the radio industry. They apply not only to radio but to most new enterprises of a scientific character. The first is the vital importance of fundamental research in laying the foundations for the new industry. The second point is that the established electrical-goods industries played an entirely negative role in the early stages of radio development. In consequence, the provision of various types of venture capital was essential to getting the new industry started. Finally, the success of a new scientific venture is dependent on a combination of managerial skill and inventive talent, which is not normally found in any one man.

But what of the future? Are we likely to have a continued flow of fundamental scientific discoveries, comparable in importance to the discovery of Hertzian waves?

It is significant to note that those who made the fundamental scientific advances which gave rise to the radio industry were all Europeans, as has been true of many other industries. Our genius in this country has lain more in applied research and advanced engineering development. We have taken the discoveries of the great European scientists and converted them into practical commercial products with a skill and ingenuity unrivalled anywhere else in the world. But most of the senior physicists of today are Europeans — Einstein, Niels Bohr,

Fermi, and so forth. It was these men and others who were responsible for the original exploration of the atomic nucleus. They have followed in the tradition of Maxwell and Hertz. Their motivation has been the creative intellectual urge to push back the boundaries of our understanding of natural phenomena. The application of these advances, except under the special pressure of wartime service, has been left entirely to others.

In recent years there has been a substantial improvement in our standards of fundamental research in this country. We have been producing more scientists of distinction, like E. O. Lawrence, I. I. Rabi, H. C. Urey, and A. H. Compton, to name but a few. It is vitally important that this trend be encouraged. Even if we chose to do so, we can no longer rely on the intellectual banks of Europe, which have been bankrupted by the ravages of war. It is essential that we should have flourishing long-range research of a basic character, carried on under the best possible environmental conditions. This need has been recognized by the leading scientists of the country. In his report to the President on a program for postwar scientific research, Vannevar Bush, a member of the M.I.T. Class of 1916, has emphasized the prime importance of support to fundamental research in universities. There are now bills before Congress which incorporate the principal recommendations of the scientists. I believe that our leaders in government are aware of the necessity of these recommendations and that suitable legislation will be passed to provide for a continued flow of fundamental scientific discoveries from this country.

Can we rely on our established industries of today to convert these scientific advances into new products and processes as rapidly as possible? I believe the answer to be, no. This statement requires an explanation.

Our well-established industries have made tremendous strides since the turn of the century in their capacity to understand and contribute to science. The electrical industry is far more alert to new developments today than it was at the time of Hertz's experiments. Our great industrial laboratories in such concerns as the General Electric Company, the American Telephone and Telegraph Company, E. I. du Pont de Nemours and Company, and the Eastman Kodak Company have hundreds of distinguished scientists in their ranks, including several Nobel Prize winners.

However, every large, well-established company tends to concentrate on certain fields of special interest. No matter how hard management tries to be receptive to new ideas, the radical notion and the new risk-taking approach are frequently not exploited. I do not wish to be misunderstood on this point. We can rely on our great industrial corporations to take substantial risks and to be foresighted in many areas. But the smaller developments, which are off the beaten track and which are in the speculative stage where their potentialities cannot be predicted, are likely to be neglected.

I believe that there will be important opportunities in the coming years for scientists and engineers, interested in the transition from fundamental research to its practical applications, to start new enterprises of their own. And in these ventures I think organized capital has a responsibility and an opportunity to play a significant role.

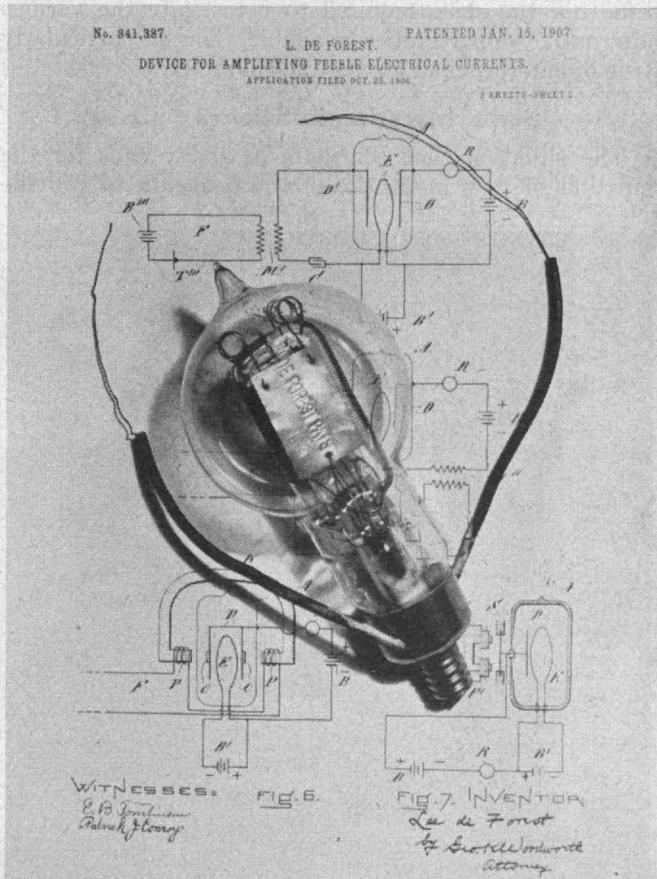
I see no reason why it should not become generally accepted that organized capital and individuals with capital have duties and responsibilities to the public as to what

they do with their money, just as it should be accepted that management and labor have duties and responsibilities to the public in the conduct of business enterprise.

Industries Based on Science

We need new scientific industries launched, and we need them launched under the most favorable auspices. Investment tradition in this country strongly favors the seasoned and well-established company. This conservative approach has been justified by the record of new companies. Although there have been spectacular successes, there has also been a very high mortality, with the result that the most reputable investment banking institutions shy away from underwriting new ventures. Moreover, the expenses involved in public flotation are too great for the new company that needs only a small amount of capital. Such enterprises, therefore, are generally deprived of the guidance and managerial experience that the well-established investment banker is in a position to offer.

Nor have they been able to obtain capital directly from institutional investors. It has not been considered sound practice for investment trusts or insurance companies to invest in unseasoned securities. In fact, until very recently it has not been legal for investment trusts which engage in selling their own shares to the public to buy securities in companies which have not been in existence for a stated number of years. All those states where there had been prohibitory regulations, however, have now modified their



Lee de Forest, American inventor, built the first three-electrode tube about 40 years ago. In so doing, De Forest made one of the most significant contributions to practical radio communication, for the modern version of the early three-electrode tube (shown above) forms the basis of nearly all electron tubes used in radio reception and transmission.

regulations so as to permit modest participation in new enterprises.

In the case of life insurance companies, the laws are also being liberalized. For example, the state of Connecticut has recently amended its statutes to permit investments up to 5 per cent of assets, free of all legal restrictions. Although the state of New York has not yet followed suit, there is no prohibitory law in Massachusetts or in many other states. The aggregations of capital controlled by investment trusts and by most life insurance companies are, therefore, no longer prevented from playing their part in providing funds for new enterprises.

Typically, however, the small new concern still has to rely on individual investors for capital. In the days when American Marconi and Nesco were launched, there were many wealthy individuals who were willing and able to put capital into new ventures. With tremendous increases in taxation, however, the number of such individuals interested in speculative long-term investments dwindled rapidly. Today, there is once more a revival of interest in speculation. The Excess Profits Tax Law has been repealed, and long-term capital gains are taxable at not over 25 per cent. A man who is in a high income-tax bracket can now increase his wealth through investments in enterprises which have an opportunity for substantial appreciation over a period of years. But there is no effectively organized machinery whereby individuals with money to invest in such enterprises can get adequate diversification of risk, and most investors have neither the time nor the skills required to investigate the various alternative opportunities available. This is particularly true of enterprises of a scientific character.

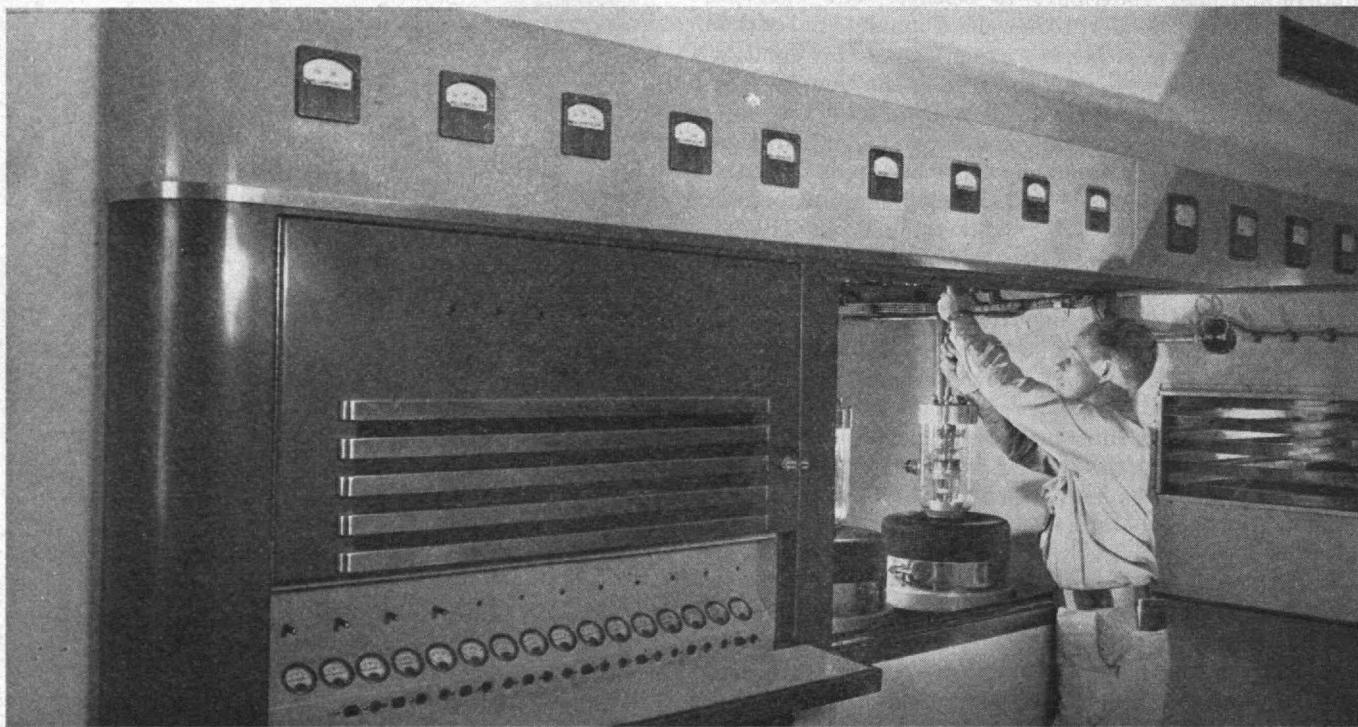
Investing in Science

The situation that confronts us today calls for the creation of new institutional arrangements to provide

venture capital. One promising suggestion that has been made is to establish a number of investment companies or holding companies in different parts of the country, the sole function of which will be to seek out, investigate, and finance new ventures. Such development companies could afford to employ professional staffs to investigate new enterprises. They should serve as receiving stations for ideas that have reached a point where the need for capital can be demonstrated, but where the requirements are not large enough to be handled by investment bankers. They could draw on experts from the universities and elsewhere as consultants and could build up a background of managerial experience in new enterprises which would be extremely helpful to the young entry. Assuming the life insurance companies and investment companies are sufficiently interested, the organization of such institutional arrangements can be greatly facilitated by the Securities and Exchange Commission, if that body chooses to encourage such an objective.

I am hopeful that life insurance companies, investment trusts, and other large institutional investors will now be willing and able to invest a small proportion of their surpluses in development companies of this character. The volume of capital in the hands of institutional investors in this country has been growing steadily and has already reached staggering magnitudes. Unless some small part of those funds can be applied to new and untried ventures, the search for security, which has led to the phenomenal increase in insurance and to the growth of management trusts, will prove a millstone around our necks and inhibit further economic progress.

It would be a mistake to conclude that the bottleneck is merely one of capital or that all that will be needed is venture-capital companies with adequate funds and staff to investigate new scientific proposals. I doubt if this set-up would be successful (*Continued on page 452*)



Westinghouse Electric Corporation

Frank Conrad, American electrical engineer, inaugurated the first regularly scheduled radio broadcast programs, thereby completing the last link in a group of scientific and engineering achievements upon which the broadcast industry is founded. The transmitter shown above is that of the historic station, KDKA.

The Scientist's Social Responsibility

Promise for the Solution of Many of Man's Problems Lies in Extending the Application of the Scientific Method to the Problems of Society

BY FRANCIS BITTER

OUR world is continually upset by discovery and invention. No sooner do we begin to settle in some semisatisfactory pattern of living than some new factor is injected into the picture and upsets one or another of the delicate balances of conflicting aims and desires which make up our civilization.

The latest culprit is the scientist. The atomic bomb particularly has focused the attention of the entire world upon him and is forcing him to consider as never before what his role may be in shaping our common destiny. On the one hand, society supports him on an increasingly lavish scale, urging him on from one success to another. On the other hand, his discoveries have serious consequences, sometimes obviously alarming, sometimes subtle and difficult to foresee. What can the scientist do about this situation? Should he give up, to some extent, his singlehearted devotion to his chosen work and undertake a study of new problems which are not professionally his?

The following three propositions, if accepted by the reader, are sufficient for us to draw a few conclusions regarding the proposed question.

(1) Responsibility is inseparable from ability.
(2) It is the responsibility of any group, particularly one supported by the public, to make certain that its special knowledge is made available to society and to do this in such a way that the implications of this knowledge may be as fully and as generally understood as possible. In times of emergency or danger it is the responsibility of such a group not only to make knowledge available but to perform for the community services for which professional specialists have not yet been trained.

(3) Applied science is important primarily in helping us find means to an end, rather than in determining which among various possible ultimate ends we wish to achieve.

From the point of view of these propositions the record of the scientist is apparently good. In war as in peace he has not only made his special knowledge generally available but has helped apply it to the urgent problems of the community.

If there is any cause for complaint, it is that the scientist has restricted the range of his interests too much. Particularly before the war the scientist was content to focus his attention on one small aspect of the physical behavior of matter, and to some extent this is true today. Subconsciously, perhaps, he assumes that all aspects of human experience are covered by a variety of specialists and that he is merely doing his share in a majestic all-inclusive research. This kind of isolationism is likely to lead to a lack of balance in the intellectual development of society. It is quite possible that some of our major ills are due to this cause. The existence of certain categories of human mis-

ery in spite of known remedies certainly suggests that we have more knowledge than we sometimes use.

In the face of this situation, it seems a pity that so much attention is being devoted to science as a subject — *i.e.*, the study of the physical universe — and so little to science as a method — *i.e.*, the technique of collecting and manipulating quantitative data. It is unlikely that coming generations will be as grateful for a few more technical inventions as they would be for a deeper insight into the causes of our collective insecurity.

During the war a few scientists had unusual occasion to appreciate the wide range of applicability of their methods and techniques. The use of the scientific method — the objective and quantitative analysis of a problem, supported by controlled experiment wherever possible — proved eminently successful in analyzing situations involving not only material objects but the human element as well. The "operations analysts," as they were sometimes called, proved extremely useful in showing how to deal with certain military problems more quantitatively and accurately than had heretofore been possible. In addition, they themselves acquired an insight into the potential value of their point of view and technical skill in a wide range of problems. New opportunity revealed a new skill, and this in turn brought with it an important new responsibility of the scientist, which responsibility it is the purpose of this article to discuss.

That the methods of mathematical analysis are applicable to a wide variety of problems is not a particularly new thought, but two surprises were in store for the operations analysts and their employers. The analysts were surprised to find an almost complete absence of mathematical "feel" on the part of those responsible for formulating policy. The administrators, on the other hand, were surprised that sufficient data could be collected to make quantitative analytical methods applicable. There was, then, this remarkable situation which we shall find again in other fields: On the one hand, administrators who were ignorant of, and often prejudiced against, quantitative methods; on the other hand, skilled analysts who were unaware of the need of the community for the application of quantitative analysis and reasoning — in short, application of the scientific method. During the war scientists and engineers were made aware of this need through the medium of the equipment which they designed. They were asked to consult on its use and so came into contact with operational data. Once in this field, they found it fruitful to go on to consider other more general operational problems.

The war emergency is now over, and specialists have been trained who can take over this new kind of work for the armed forces. Perhaps some of the effort that was



Farmer's Return

Mildred Hatch

No sooner do we begin to settle in some semisatisfactory pattern of living than some new factor is injected into the picture and upsets one or another of the delicate balances of conflicting aims and desires which make up our civilization.

diverted from normal pursuits to the winning of the war should now be devoted to tackling the new problems which currently confront us.

Knowledge Not Fully Utilized

All these problems seem to center around the sensible exploitation of the skills and knowledge which mankind has acquired. A proper use of atomic energy is but one of these. Our present knowledge of disease, food production, or manufacturing, for example, offers greater potentialities for services to mankind than are realized. The difficulties in the way of sensibly exploiting our assets may well be prodigious, but surely the importance of new light in this field is so great that we should devote more and more effort to it, in spite of the difficulties, rather than transfer our attention to problems which are apparently simpler and more immediately rewarding.

If we consider the three propositions on social responsibility, it appears that the scientist may have a responsibility toward society which he is not fulfilling. He is unquestionably doing a great deal in revealing facts and formulating concepts about the nature of the physical world. He certainly cannot step completely beyond his field and tell us what is good and what is bad, what we ought and ought not to do. That is the task of other specialists. But between these extremes there is a range of problems of the greatest practical importance to us all — quantitative problems of considerable complexity —

in which the methods and techniques of science may indicate new approaches.

What then, are these problems, and how might the scientist find solutions for them? Before answering this question, let us reflect for a moment on some of our social problems.

It is clear that the people who are at present running the world — who determine its industrial, economic, technical, political, and every other kind of pattern — are doing less than a perfect job. It is also clear that the difficulties which face these men do not arise exclusively from conflicting motives. In at least some important instances there could be agreement on motive, but there is lacking a convincing demonstration as to what constitutes adequate means.

In 40 years almost all today's leaders will be dead or retired, and their places will be taken by the new generation which is now preparing for the job ahead. It is through the schools and colleges that scientists might most suitably and effectively contribute to the solution of social problems in educating the newer generations of students. It is in the educational institutions that we find proper conditions for research and study, that there are specialists in all the relevant fields of learning, and impressionable minds eager to take up new and promising ideas. It is here, also, that the scientist as a teacher already is charged with the responsibility not only of teaching his students how to earn a (*Continued on page 438*)

THE INSTITUTE GAZETTE

PREPARED IN COLLABORATION WITH THE TECHNOLOGY NEWS SERVICE

... Honored ...

THE Medal for Merit, the highest of the awards which can be bestowed only on civilians, was presented to President Compton by Lieutenant General O. W. Griswold, commanding general of the First Service Command, on April 2.

The ceremony, which was held in Dr. Compton's office at the Institute, was witnessed by Mrs. Compton, Lieutenant Colonel John C. Dunbar, '25, Head of the Department of Military Science and Tactics, and members of the Institute's administrative council. The citation of the award, signed by President Truman, follows:

Dr. Karl Taylor Compton, member of the National Defense Research Committee, from 27 June 1940 to 2 September 1945, and Chief, Office of the Field Service of the Office of Scientific Research and Development, from 11 October 1943 to 30 July 1945, for exceptionally meritorious conduct in the performance of outstanding services to his country. As Chief of the Office of Field Service, Dr. Compton mobilized and made available to the needs of the armed services civilian experts in various scientific branches who assisted in the introduction into use within theaters of operations of new weapons, devices, and techniques developed by the Office of Scientific Research and Development and others. Through his vision in the formulation of the program of research and development of microwave radar and his steadfast support of that program, Dr. Compton contributed greatly to the technical superiority of the Allied forces in this field. Under his direct leadership, the programs of research and development of the United States and the United Kingdom were integrated for a maximum effectiveness in the radar field. The importance of this work was such that Dr. Compton may be said to have been personally responsible for hastening the termination of hostilities.

In accepting the medal, Dr. Compton replied:

General Griswold: To you as representative of the Commander in Chief I express my most sincere appreciation for this great honor. To me it will always be a symbol and reminder of the wonderfully fine teamwork which developed to such a high state of effectiveness during the war involving the cooperation between a very fine group of scientists and a very fine group of military personnel.

I am especially happy to have received this medal at your hands because I recall our association in Manila last August amid the siege of the city and country whose return to freedom was due to such an outstanding degree to the fine work of the Fourteenth Army Corps under your command.

It was this military achievement which brought the final consummation to General MacArthur's earlier promise to the Filipinos: "I shall return."

I trust, sir, that you will convey to the Commander in Chief my sincere appreciation of this honor.

... Selective ...

IN attendance at the 249th meeting of the Alumni Council, held in Pritchett Hall of Walker Memorial on March 28, were 93 members and guests. In the absence of President A. Warren Norton, '21, Vice-president Alfred T. Glassett, '20, presided and quickly passed through the business session, in which the customary reports were presented. Henry B. Kane, '24, Director of the Alumni Fund, reported that approximately \$165,000 in contributions have been received from more than 10,000 Alumni during the past year, thereby reaching the goals set for number of contributors and amount of contributions.

Robert E. Barnhart, one of the Institute's married veteran students in Course XVI, was introduced by Vice-president Glassett. Mr. Barnhart is in the second term of his freshman year and, together with Mrs. Barnhart, became one of the early residents of Westgate, the Institute's housing community for veterans who have returned to M.I.T. for study. Mr. Barnhart gave a terse, meaty, witty, and highly entertaining talk on highlights of life at Westgate.

President Compton then discussed certain phases of the administration budget and gave comparisons of figures for



"For exceptionally meritorious conduct in the performance of outstanding services to his country," the Medal for Merit was awarded to President Compton by Lieutenant General O. W. Griswold.

the present year with those of earlier periods. It was particularly striking that figures of expenses and income are continuing to grow.

The final speaker of the evening was Professor B. Alden Thresher, '20, Director of Admissions. His talk was particularly timely in view of the extraordinary increase in correspondence, inquiries, and applications since the end of the war.

Professor Thresher traced the development of the Institute's policy from one of "automatic" to one of "selective" admission and indicated the important part played by the Institute's 200 Honorary Secretaries, who serve as counsellors to prospective students and aid the Admissions Office through reports on candidates. Through their co-operation, the selective process is partly decentralized and made effective over a wide area.

He emphasized the importance of weighing each case on its merits and of deferring a decision until the evidence is all in hand, and he spoke of the difficulty of reconciling this policy with the natural desire of every candidate to know as early as possible what his chances are.

The rush of applications from veterans has brought many new problems. Some 55 members of the teaching staff have co-operated in giving part-time service interviewing veterans who call in person. It is of the greatest

importance that each of these candidates should be able to talk over his problems fully with a responsible officer of the Institute. The many who cannot be accepted can thus be assured of a careful hearing and informed advice on their educational problems.

The Institute's policy of giving priority to its former students returning from the service has made it necessary to cease accepting for work in science or engineering any new candidates who have had a start in college work elsewhere. Most of these can return to the colleges they previously attended and are encouraged to do so.

The freshman class next September will number 900, including some who will start their freshman year in June. This total will be divided between 1946 secondary school graduates and veterans.

It is estimated that in the 12 months following V-J Day more than 10,000 veterans will have been interviewed at the Institute and 75,000 new inquiries about admission will have been answered. Actual application, although not of this order of magnitude, remains far above the Institute's capacity, even after the 50 per cent increase in enrollment already authorized.

. . . Alumni Day—June 8 . . .

PRE-WAR festivities will be revived for Alumni Day 1946 when Alumni will gather at the Institute on Saturday, June 8, for an inspection of exhibits illustrating some of the Institute's contributions to the winning of the war, a luncheon in the Great Court, a symposium on "The Technology of International Peace," and — winding up the day's activities — the popular Stein-on-the-Table Banquet at the Hotel Statler.

In renewing the Alumni reunion symposia, which were reluctantly omitted during the past five war years, internationally known authorities will speak on different aspects of "The Technology of International Peace" in keeping with the thought that science and technology have their proper place in peace as well as in war.

Photographic exhibits, especially prepared for Alumni Day, will portray the research and training activities in which the Institute engaged during the war and will illustrate devices that helped bring about a victorious peace. An innovation will be made this year by inviting wives of Alumni to attend the banquet.

Detailed plans have not yet been fixed with finality, but the program is rapidly taking shape as the result of much hard work on the part of the several committees. Devoting sufficient time from his regular duties as head of the Department of Food Technology to serve as general chairman, William L. Campbell, '15, announces the program for Alumni Day as follows:

10:00 A.M. to Noon

Registration of Alumni and guests in the lobby of Building 10, M.I.T., inspection of photographic exhibits portraying the Institute's activities in research and training during the war, and visits to Departments.

12:30 P.M.

Luncheon in the Great Court, to which wives of Alumni are invited.

2:30 P.M.

Symposium on "The Technology of International Peace," Walker Memorial.

7:00 P.M.

Stein-on-the-Table Banquet, Hotel Statler, Boston. As usual, seating will be by Classes. Wives of Alumni are invited to attend.

Reunion Plans

Plans for Class Reunions, in many cases the first since the war began, have been announced by the following Classes:

- 1886 Probably no reunion will be held.
- 1888 Thompson dinner tentatively set for May 11, Engineers Club, Boston.
- 1891 June 7-9, New Ocean House, Swampscott, Mass.
- 1896 June 6-7, East Bay Lodge, Osterville, Mass.
- 1899 Class will undertake to sit together with ladies at the luncheon and banquet on Alumni Day, June 8.
- 1901 June 6-7, New Ocean House, Swampscott, Mass.
- 1905 June 21-23, East Bay Lodge, Osterville, Mass.
- 1906 Plans under way for reunion during the latter part of June. Details later.
- 1910 June 5-8, place to be announced later.
- 1911 May 31-June 2, East Bay Lodge, Osterville, Mass.
- 1915 June 13-16, Cape Codder Hotel, Falmouth, Mass.
- 1916 June 14-16, East Bay Lodge, Osterville, Mass.
- 1920 June 14-16, Sheldon House, Pine Orchard, Conn.
- 1921 June 9-10, East Bay Lodge, Osterville, Mass.
- 1924 June 8, headquarters room at Hotel Statler, Boston.
- 1926 June 22-23, Wianno Club, Osterville, Mass.
- 1931 June 15-16, Saybrook, Conn.
- 1935 Plans under way for reunion in early part of September. Details later.
- 1936 Stag banquet in Boston on June 7 and also possible assembling somewhere on June 9. Further information later.
- 1941 Probably banquet in Boston on June 7 and very likely assembling on June 9. Further information later.

Additional information will be available from Class Secretaries

This recent aerial photograph of the Institute shows, beyond the main dome, many new structures erected during the war. After having housed the Navy's V-12 students, the former Riverside Hotel is once more in use as the Graduate House.



M.I.T. Photo

Symposium and banquet speakers will be announced in the June issue of *The Review* when the final program has been completed. Acceptances already at hand are sufficient to assure that the high caliber of former symposia will be maintained.

A capable and hard-working group of committees is now actively engaged in putting the finishing touches to Alumni Day plans in the expectation that the first post-war Alumni Day Reunion will set a new record in attendance and good fellowship. Chairmen of the committees are as follows: *Ladies*: Mrs. Leicester F. Hamilton; *Ways and Means*: Horace S. Ford; *Transportation and Hotels*: Emmons J. Whitcomb, '11; *Publicity*: Ralph T. Jope, '28; *Exhibits*: Herbert L. Beckwith, '26; *Arrangements for Symposium*: Edward R. Schwarz, '23; *Luncheon*: John B. Wilbur, '26; *Banquet*: Parke D. Appel, '22; and *Registration*: Wolcott A. Hokanson.

... Advancement ...

FACULTY promotions and appointments of new members of the staff at the Institute for the academic year 1946-1947 were announced recently by President Compton.

Five well-known associate professors have been advanced to the rank of professor. They are: Richard S. Bear, Department of Biology; Gordon S. Brown, '31, Department of Electrical Engineering; Morris Cohen, '33, Department of Metallurgy; Victor F. Weisskopf, Department of Physics; and Robert S. Harris, '28, who has transferred from the Department of Biology to the Department of Food Technology.

Twenty assistant professors promoted to the grade of associate professor are: Joseph Bicknell, '34, Department of Aeronautical Engineering; Richard H. Bolt, Department of Physics; Lynwood S. Bryant and Paul M. Chalmers, Department of English and History; Albert G. H. Dietz, '32, and Howard R. Staley, '35, Department of Building Engineering and Construction; Allan T. Gifford, '27, and Charles H. Norris, '31, Department of Civil and Sanitary Engineering; Albert C. Hall, '37, and Charles Kingsley, Jr., '27, Department of Electrical Engineering; Lawrence J. Heidt and Walter H. Stockmayer, '35, Department of Chemistry; Kurt S. Lion,

Department of Biology; Charles A. Myers, Department of Economics and Social Science; Eric Reissner, '38, Raphael Salem, Henry Wallman, and Samuel D. Zeldin, Department of Mathematics; Gerald B. Tallman, Department of Business and Engineering Administration; and Glenn C. Williams, '42, Department of Chemical Engineering.

Members of the staff promoted to the rank of assistant professor include: Robert L. Bishop, Department of Economics and Social Science; Malcolm S. Burton, '43, Louis F. Coffin, Jr., '43, Harry Majors, Jr., 10-44, Frank J. Mehringer, '41, and Lucien R. Vianey, 6-45, Department of Mechanical Engineering; Donald P. Campbell, '43, and Henry J. Zimmermann, '42, Department of Electrical Engineering; Stuart Edgerly and Thomas H. D. Mahoney, Department of English and History; George T. Johnson, Department of Biology; Robert W. Kennedy, Department of Architecture; Philip R. Wallace, Department of Mathematics; and George A. Znamensky, Department of Modern Languages.

New appointments to the rank of associate professor include: Walter H. Gale, '29, Department of Aeronautical Engineering; William R. Hawthorne, '39, Department of Mechanical Engineering; Albert G. Hill, Department of Physics; Witold Hurewicz, Department of Mathematics; Albert R. Kaufmann, '38, Department of Metallurgy; and Ian M. Stewart, '37, Department of Chemical Engineering.

New assistant professors are: Frank K. Bentley and William E. Weems, Department of Aeronautical Engineering; Donald B. Broughton, '39, John C. Quinn, '35, and Alexander M. Smith, 2d, '43, Department of Chemical Engineering; Thomas M. Hill, Department of Business and Engineering Administration; Elting E. Morison, Department of English and History; William A. Leary, '35, David A. Mooney, '34, F. Everett Reed, Jr., '39, Warren M. Rohsenow, and Milton C. Shaw, Department of Mechanical Engineering; Stuart T. Martin, Jr., '34, Department of Electrical Engineering; and George E. Valley, Jr., '35, Department of Physics.

Appointed to the grade of instructor were: Anthony P. DiVencenzo, John G. Linvill, '43, William K. Linvill, 6-45, Fred I. Magee, Henry C. Maulshagen, Edward J. Rhoad, Jr., William L. Root, '43, and Ernest B. Therkel-

sen, '38, Department of Electrical Engineering; Horace C. Buxton, James Duesenberry, Lionel W. Mackenzie, Jr., and Robert V. Rosa, Department of Economics and Social Science; Myle J. Holley, Jr., '39, and Ariel A. Thomas, '36, Department of Civil and Sanitary Engineering; Joseph A. Polack, '43, Department of Chemical Engineering; Thomas J. Kent, Jr., '43, Department of Architecture; Harold W. Wyatt, '43, Department of Mechanical Engineering; and Eugene Pare, Section of Graphics.

... Visiting Committee Report . . .

THE Committee on the Department of Aeronautical Engineering* met at the Institute on August 17 for the purpose of inspecting the facilities available for instruction and research in aeronautical engineering and to discuss with the faculty of the Department their plans for the future. After a full day at M.I.T., the Committee met in the evening and considered its findings and recommendations. The findings are:

(1) The effect of the war is to enhance vastly the importance to the country of aeronautical engineering. It is estimated that some 5,000,000 persons, either in the armed forces or in industry, have been directly concerned with the airplane. Technological advancement has been abnormally rapid. Both civil aviation and national security in-

* Members of the Committee for 1945-1946 are: Gordon S. Rentschler, chairman, Godfrey L. Cabot, '81, Charles H. Chatfield, '14, George J. Mead, '16, Theodore P. Wright, '18, Ralph S. Damon, and George W. Lewis.

dicate a strong demand for aeronautical engineers. Returning veterans, discharged war-plant workers, and the new generation of students already show a desire for professional training in aeronautical engineering in numbers probably beyond the present capacity of the educational institutions.

(2) It is probable that the state universities and vocational training schools will greatly expand their facilities for aeronautical education. Expansion plans are known to be in hand at Purdue and the universities of Illinois, Minnesota, Maryland, Michigan, California (Los Angeles), North Carolina, and Texas. In Great Britain an Empire Air College is to be established by the labor government on an elaborate scale. Such plans imply mass education in some instances of a type that M.I.T. cannot handle.

(3) There will be an insistent demand from industry, government agencies, and the armed forces for aeronautical scientists and engineers of the highest competence. Some will be needed for design, others for research and teaching. Some are needed for the air frame, others for its propulsion and control. There will be a need for both specialists and engineers with a broad foundation in the aeronautical sciences.

(4) There will be a shortage of courses for the professional training of young men to be leaders in this exacting field of technology. In the past, only the California Institute of Technology and M.I.T. have offered comprehensive training at the highest graduate level. Harvard and Princeton have recently inaugurated special aeronautical

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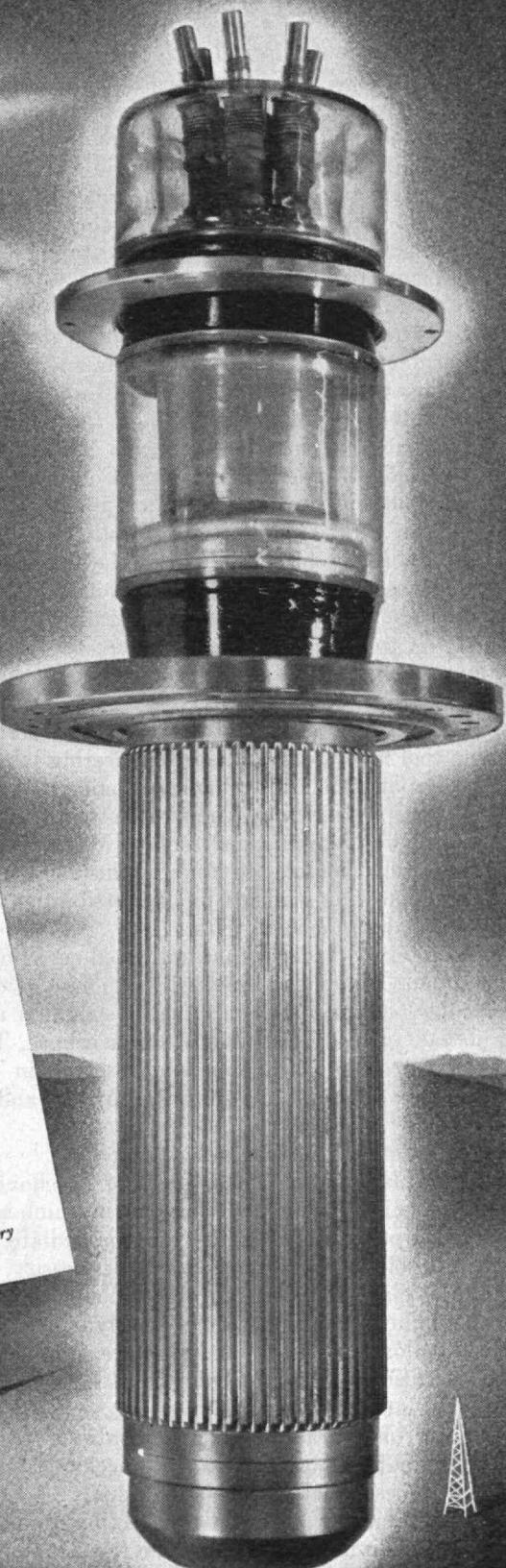
Members of the Chungking M.I.T. Club, numbering about 70, include graduates from the Classes of 1913 to 1941 and represent Courses I, II, III, IV, VI, VIII, X, XI, XII, XIII, XIV. Officers of the club are Yu Hsia Ku, '25, VI, President, Turpin Hsi, '14, XI, Vice-president, and Chia Hua Huang, '27, IV, Secretary-Treasurer. Members of the club shown here are: (Back row standing, left to right) Hsi Mou Li, '19, VI; Charles Wang, '39, VI; Nyan-Sing Lieu, '41, II; Tzeng Jueq Suen, '35, X; Jarvis Tzu Hsiang Huang, '24, XII; George Moy Orne, '31, VI; Tsung-Shu Hsu, '25, X; Tse-Sing Sih, '18, I; David Henry Kiang, '31, VIII; Sung-Sing Kwan, '19, IV; Norman Fook Cheung Li, '38, VI-C; Tsun-Tsing Chang, '35, VI; Kow Kwong Choong, '38, II; Chia Hsu Hou, '38, VI. (Middle row sitting, left to right) Chou Wang, '16, XIII-B; Ren Shou Hsu, '38, I; Chee-Sing Hsin, '14, XIII, XIII-B; Ming Tsai Hsu, '13, X; Chien Hsun Sung, '17, XIII; Turpin Hsi, '14, XI, Vice-president; Colonel Robert F. Seedlock, '40, I; Kwei Lun Hsueh, '18, III; Chi-Che Chu, '16, XIII; Ziang Yien Chow, '15, XI. (Front row sitting, left to right) Sheng Heng Fang, '38, VIII; Chi Foo Yeh, '17, XIII-B; You Yung Wu, '37, XVI; Kuang-Piao Hu, '19, VI; Ping Yok Loo, '16, II; Poh Yuan Hu, '17, III; Ming Hsing Pai, '20, VI; Ko-Chi Chang, '21, II; Chia Hua Huang, '27, IV, Secretary-Treasurer; and Jung-An Lo, '21, II. This list of names was transmitted from C. H. Huang, Secretary-Treasurer, through Colonel Seedlock, who recently advised that the Chungking Club had been carrying on with its regular meetings throughout the entire period of the war.

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THE INSTITUTE GAZETTE

(Continued from page 432)

engineering courses, and others may become established.

(5) The Committee finds that facilities and staff at the Institute are adequate to handle a reasonable number of high-grade undergraduate four-year-course students in Aeronautical Engineering (air frame) and in Automotive Engineering (engines). In the Graduate School, M.I.T. can offer superior opportunities in instrumentation and control devices, aeroelasticity, structures, stability and control, and engines and thermodynamics.

(6) The Committee worked with the staff in developing a plan for a gas turbine laboratory provided with a supersonic wind tunnel and associated research and testing equipment. The Committee assumed the responsibility for obtaining funds for this facility, and the following have made contributions in response to this effort: Alfred P. Sloan, Jr., '95, the General Electric Company, the Westinghouse Electric Corporation, the Curtiss-Wright Corporation, the United Aircraft Corporation, and the Hooven, Owens, Rentschler Company. The Committee believes that these facilities, provided adequate staff is added at the same time, will give the Institute an excellent opportunity to attract graduate students for work in this new and revolutionary field of propulsion and power generation.

(7) The Committee was informed of plans to modernize the machine tool laboratory and the engineering laboratories of the Department of Mechanical Engineering and heartily endorsed such moves. The Committee is of the opinion that the obsolete machine tools of World War I design are entirely inadequate for the instruction of aeronautical engineering students in the possibilities and limitations of modern machine tools.

(8) The Committee believes that unlimited enrollment of undergraduate students or groups of student officers may so occupy facilities and staff that instruction and research in the Graduate School will suffer eclipse. The Committee believes that teaching and research in the Graduate School are of first importance to M.I.T. and to the country.

Recommendations of the Committee are:

(1) That the plans of the Department of Mechanical Engineering to enlarge and modernize its machine tool laboratory be implemented and that the immediate replacement of obsolete tools be considered a necessity.

(2) That the plans for a gas turbine laboratory with accessory equipment for supersonic aerodynamics are unanimously endorsed, if additional staff are supplied.

(3) That additions to the teaching staff be made to strengthen graduate work in aerodynamics.

(4) That the undergraduate course continue to be based on the fundamental subjects of mechanical engineering and the essentials of airplane design.

(5) That consideration be given to selecting students of scientific aptitude in their senior year for a modified program leading into the Graduate School.

(6) That undergraduate enrollment be limited to promising students and to such numbers as will permit the staff to devote adequate attention to graduate students and research.

(7) That graduate enrollment be limited to superior students, that the number of foreign students be kept small in proportion, that special officer students be limited to those adequately prepared, and that the number of graduate students in any special field be limited by the capacity of the staff and the special facilities available to them. In general, we recommend that graduate students should have free access to the leading professors and should participate in their research.

(8) That undergraduate students in Course XVI wishing to include gas turbines, engines, and combustion be required to enter the Graduate School for a fifth year.

(9) That undergraduate students primarily interested in power plants register in Course II and that those primarily interested in air transportation register in Course XV. Likewise we recommend that undergraduates primarily interested in manufacturing, materials, fuel, and other special aspects for the aeronautical industry register in appropriate Courses, other than Course XVI. Such students registered in other Courses should be allowed to take aeronautical subjects only to the extent that facilities are available.

Our final over-all recommendation is that the Department be now considered to have greatly increased importance to M.I.T. and to the country and that it be strengthened in every way to insure a position of unquestioned leadership. Such strengthening should come first in staff and subsequently in special facilities needed for the Graduate School. Limitation of enrollment is essential to high quality.

. . . Centennial . . .

ONE hundred years ago William Barton Rogers, later to become founder and first president of the Institute, was writing a memorable letter at the University of Virginia where he was professor of geology at the time. The letter, dated March 13, 1846, was written to his brother, Henry, in Boston, who was also a well-known geologist, and in it William Barton Rogers revealed that already his thoughts had turned to the Boston area as the place for him to work to set up a new technical school:

. . . Ever since I have known something of the knowledge-seeking spirit, and the intellectual capabilities of the community in and around Boston, I have felt persuaded that of all places in the world it was the one most certain to derive the highest benefits from a Polytechnic Institution. The occupations and interests of the great mass of the people are immediately connected with the applications of physical science, and their quick intelligence has already impressed them with just ideas of the value of scientific teaching in their daily pursuits. . . .¹

William Barton Rogers then proceeds to formulate at length "A Plan for a Polytechnic School in Boston,"² in which is outlined essentially the scheme under which the M.I.T. is carried on today. He first conceives that "A school of practical science completely organized should . . . embrace full courses of instruction in all the principles of physical truth having direct relation to the art of constructing machinery, the application of motive

(Continued on page 436)

¹ *Life and Letters of William Barton Rogers*, edited by his wife (Boston and New York: Houghton, Mifflin and Company, 1896), I, p. 259.

² *Ibid.*, pp. 420-427.



WEAVER OF SPEECH This photograph shows the wiring of a switchboard. After the switchboard is made, there is the further job of fitting it into the telephone system. It takes thousands of man hours to install a switchboard for just 1000 new telephone lines.

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THE INSTITUTE GAZETTE

(Continued from page 434)

power, manufactures, mechanical and chemical, the art of engraving with electrotype and photography, mineral exploration and mining, chemical analysis, engineering, locomotion and agriculture."

This would require two departments: ". . . one in which by courses of lectures, amply illustrated, a broad and solid foundation should be laid in general physics, including especially the mechanics of solids, liquids and airs, and the laws of heat, electricity, magnetism and light, and in the chemistry of the more important inorganic and organic principles." This department, Rogers figured would require two professors — an estimate which today seems ludicrous as to quantity and implying either superficiality or universal genius on the part of the instructors.

The other and practical department was to "embrace instruction in chemical manipulation and the analysis of chemical products, ores, metals and other materials used in the arts, as well as of soils and manures." Practical, elementary mathematics, instruction in modeling and drawing, and courses in architecture and engineering were also to be given by this department, which was to be handled by two instructors who were to be subordinate to the professors in the scientific department.

But Rogers himself envisioned great expansion, for he

adds immediately that a scheme of this kind would "prove so signally successful as ultimately to require its expansion into a polytechnic college on the most ample scale, in which, along with all the subjects above referred to, would be embraced full courses in elementary mathematics and instruction, perhaps, in the French and German languages. . . . I doubt not that such a nucleus-school would, with the growth of this active and knowledge-seeking community, finally expand into a great institution comprehending the whole field of physical science and the arts with the auxiliary branches of the mathematics and modern languages. . . ." Popular lectures by well-known scientists, similar to those given by Faraday, Wheatstone, and others at the Royal Institute of London, were particularly stressed by Rogers in his plan, and the Institute has always adhered to this course.

One single sentence illustrates perhaps better than any other Rogers' underlying theory of what a technical school should be and accomplish. He says, "The true and only practicable object of a polytechnic school is, as I conceive, the teaching, not of the minute details and manipulations of the arts, which can be done only in the workshop, but the inculcation of those scientific principles which form the basis and explanation of them, and along with this a full and methodical review of all their leading processes and operations in connection with physical laws." Several pages devoted to eulogizing science and its application to industry, agriculture, and engineering construction sound a bit trite today, but one must recall that Rogers lived in the generation which

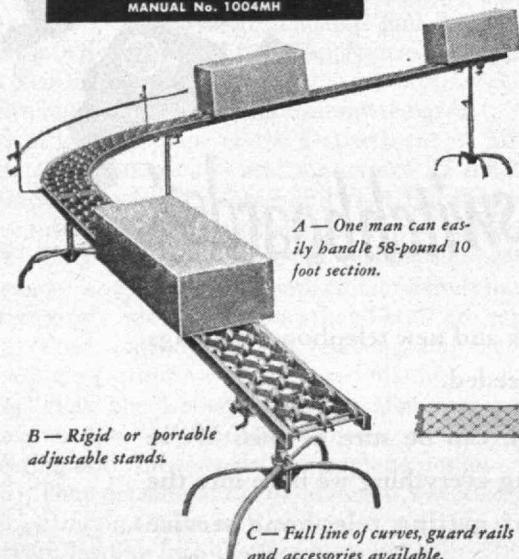
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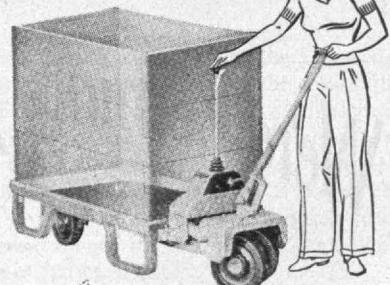
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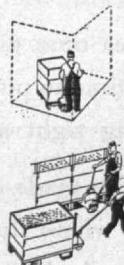
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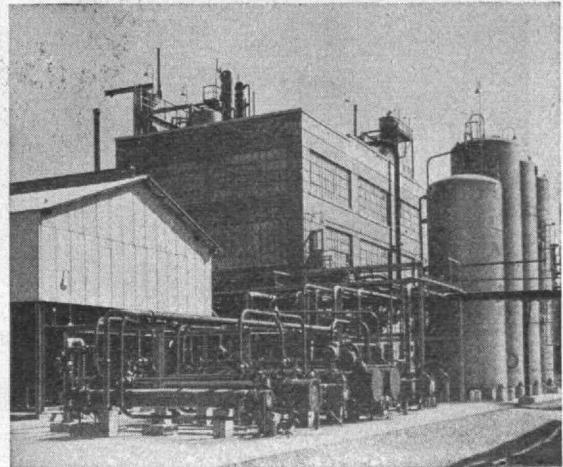
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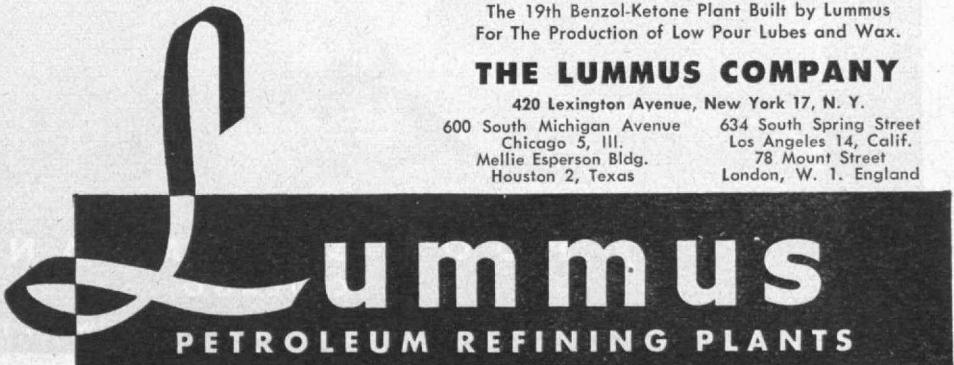
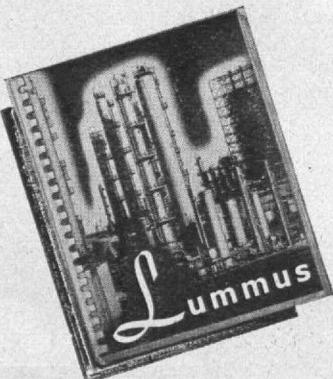
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THE INSTITUTE GAZETTE

(Concluded from page 436)

found revolutionary Herbert Spencer's *Essays on Education*, in which a comparison is made between classical and scientific education and the merits of scientific training are extolled.

Rogers neatly summarizes his plan in his final sentence by saying, "A polytechnic school, therefore, duly organized, has in view an object of the utmost practical value, and one which in such a community as that of Boston could not fail of being realized in the amplest degree."

The summer of 1846 found William Barton Rogers once again in Boston. Three years later he married a Boston girl, Miss Emma Savage, daughter of Hon. James Savage, LL.D., author of the *Genealogical Dictionary of New England*, and by 1853 he had left Virginia and settled in Boston. Throughout the succeeding years William Barton Rogers was to work increasingly to bring the technical institute into reality. Success crowned his efforts on the legal side when Governor Andrew on April 10, 1861, signed the Act of Incorporation of the M.I.T. only two days before the firing on Fort Sumter marked the beginning of the Civil War. It was almost 20 years from the time that William wrote his plan to Henry that classes began at the Institute; however, on February 20, 1865, President Rogers could write in his diary — "Organized the School. Fifteen students entered. May not this prove a memorable day!"

THE SCIENTIST'S SOCIAL RESPONSIBILITY

(Continued from page 428)

living but also of helping to formulate general educational policy. In fulfilling to the utmost his role as teacher, the scientist will be concerned with the relationship between subjects taught and the ultimate educational needs of his pupils.

How does the skill which the student acquires help him to solve the problems which seem most important to him in his subsequent life as a mature citizen? The problem of earning a living is, of course, one of the most important, but this problem is almost automatically taken care of by the very nature of our educational program and the organization of our faculties. We produce specialists whose detailed knowledge of medicine, electrical engineering, law, or some other aspect of human enterprise is likely to be sufficiently in demand so that they may expect to earn more than the average citizen.

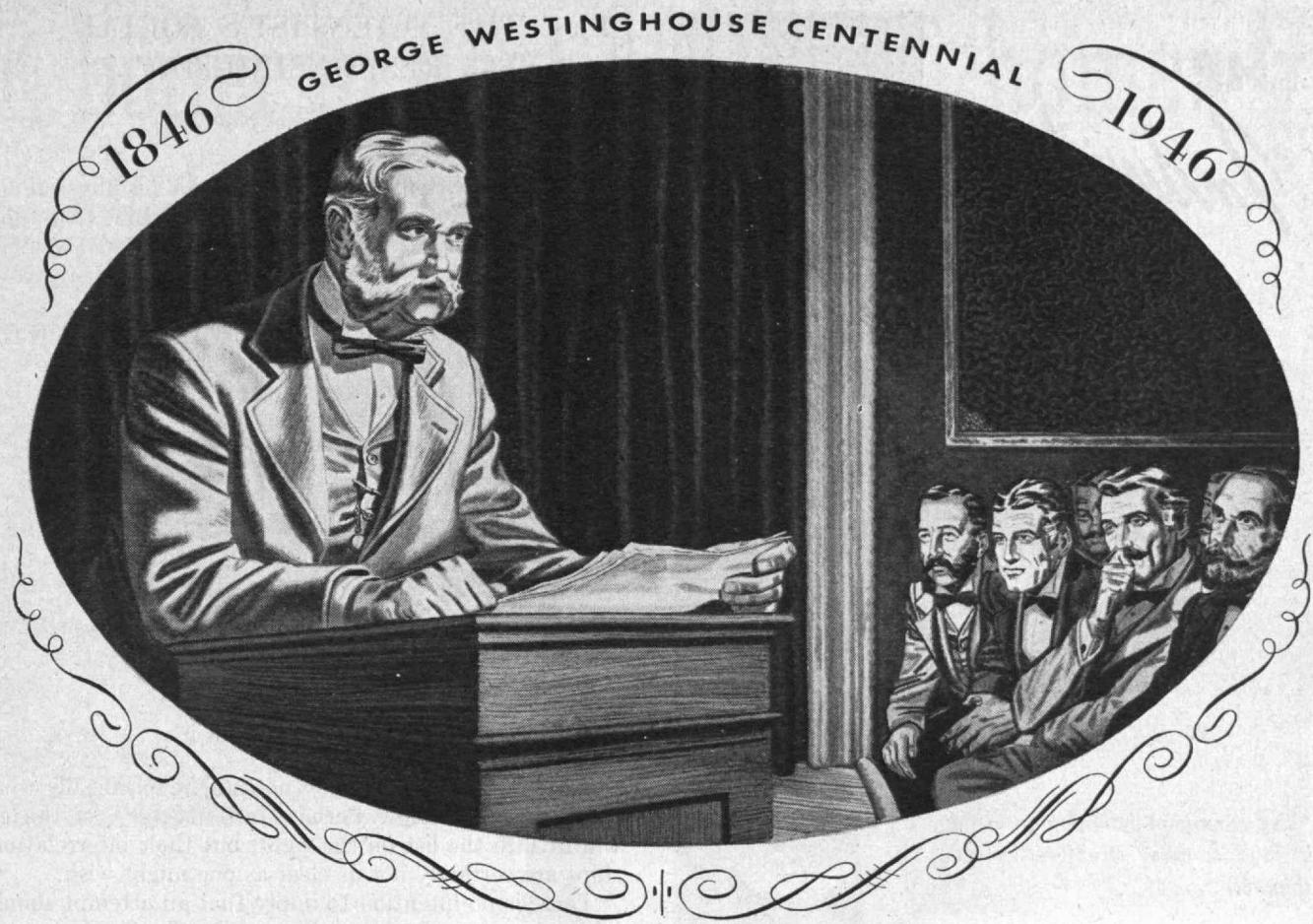
It is clear, however, that while a citizen benefits from special advantages which he may have over his contemporaries, as in education, he may be limited by existing conditions in his community, in his country, and indeed in the whole world. He cannot live in health if his surroundings are full of disease. He cannot live in peace and happiness in a community permeated with social unrest and dissatisfaction or threatened from the outside with war. He cannot even effectively create dreams of a better life for which to strive if all his leisure moments

(Continued on page 440)



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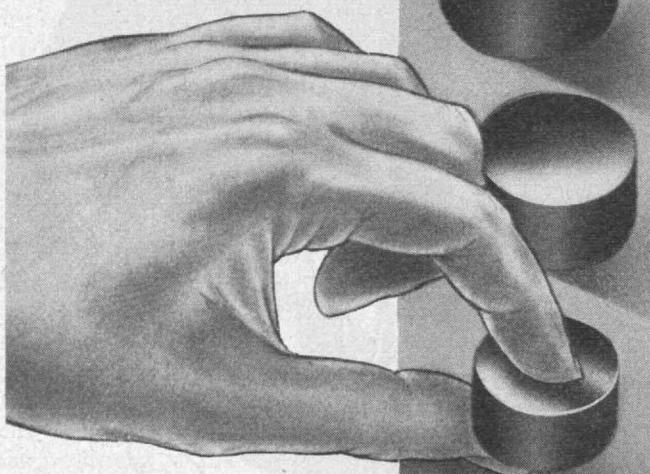
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**THE SCIENTIST'S SOCIAL
RESPONSIBILITY**

(Continued from page 438)

are taken up with nagging worries which his physical and emotional surroundings force upon him. How, then, does the education of a student help him to cope with some of these more general problems which he has to face, either directly or indirectly?

The following partial list of subjects which a student is taught and of the nonprofessional problems that later concern him can readily be expanded by the reader:

What the student is taught	What the grown-up man is interested in
English	Health
History	Food
Geography	Clothing
Mathematics	Peace
Physics	Money
Economics	Communication and language
Chemistry	Transportation
Languages	Government
Philosophy	Energy
Biology	Entertainment

Clearly the average man is not taught specifically what he would like to know. Perhaps bits and pieces on the left will fit into the list on the right, but their interrelationships are certainly not as clear as one might wish.

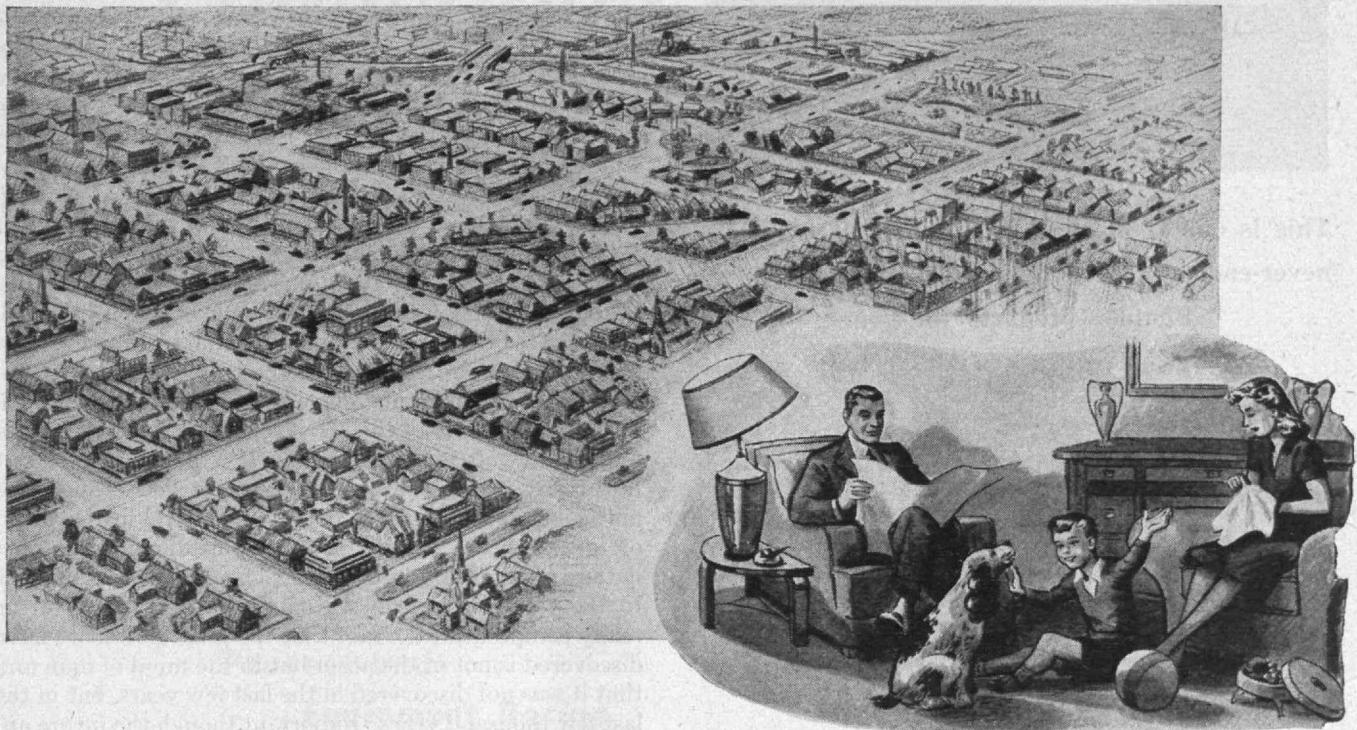
There is no intention to imply that an attempt should be made to teach the student primarily how to apply knowledge to specific problems. Education is a tool, and its greatest value is perhaps its flexibility. It should be applicable to the solutions of yet unformulated problems, and the student should be made aware of the adaptability of knowledge first of all. But how can we expect the student to grasp fully and quickly the value of his education in connection with the problems listed if the instructors themselves do not bear this relationship constantly in mind? For example, in teaching the methods of science (*i.e.*, the collection of relevant data and their manipulation with the help of mathematics) are we not guilty of concealing its generality by emphasizing its applicability to physics, chemistry, and abstract geometry? How many students, when they leave a university, have any notion that simultaneous linear equations or the maximizing of an integral may be of practical value apart from standard engineering applications, or that the Bureau of the Census might provide data which could increase the value of these mathematical techniques?

The Task Ahead—And Mathematics

It seems clear that such broad questions require the close collaboration of specialists from many fields and that if the scientist is to make a contribution, he must study these new problems with the same devotion and thoroughness which have characterized his professional activities. The very selection of problems for solution requires a background of experience that can be acquired only by serious co-ordinated effort over a period of years. But it is precisely this kind of sustained effort that can eventually produce great results. Surely the problem of turning over to the next generation a summary of our

(Continued on page 442)

1 boiler to heat 10,000 homes?



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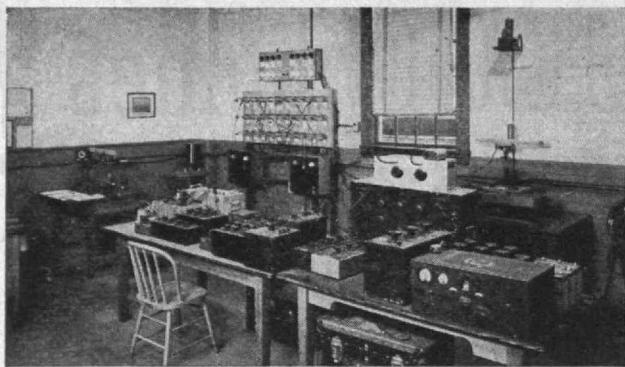
Buyers of the largest boilers naturally make the most exacting investigations. Therefore this proportion of 10 out of 14—approximately 70%—speaks for itself as recognition of the engineering ability and boiler-building skill that is reflected in C-E design and workmanship. And, since C-E builds steam generating units ranging from these exceptionally large ones down to the smallest boilers and stokers used by industry, you, too, can select your next steam generating equipment from the extensive C-E line. Make no mistake about it, there are real advantages to be gained when you install equipment designed and built by a company, such as Combustion Engineering, that knows and covers its field from A to Z. A-925C



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THE SCIENTIST'S SOCIAL RESPONSIBILITY

(Continued from page 440)

experience and skill, in such a form that its relevance to the future is clearly demonstrated, is a task worthy of the collaboration of the best minds in all the fields of learning.

A scientist venturing into the new fields suggested here would probably feel that he could help in two ways: in selecting from past experience the data on which answers to present and future problems depend, and in selecting the mathematical tools required to produce a solution.

The significance of these two points to a scientist is probably not understood by most nonscientists. Perhaps most people can see that our ability to build trains, bridges, airplanes, radio sets, or atomic bombs is based on skill in selecting and manipulating data. Probably few realize that these things are merely incidental external manifestations of inner changes in the minds of men. Everyone is aware of the significance of an airplane for a man who wants to travel from New York to Tokyo. But how many realize the significance of various branches of mathematics to a man who wants to travel in the world of ideas, or the significance of painstakingly acquired data to a man who wants to travel from the world of ideas to the world of men and atoms? And how many of us really comprehend the fact that the great power we have discovered is not in the atom but in the mind of man and that it was not discovered in the last few years, but in the last few thousand years? Important though the future applications of nuclear energy may seem, our lives and those of our children will be even more fundamentally altered by the dissemination of mental skills, the true significance of which we are only beginning to appreciate.

Initial Steps

These generalities must be made more specific before we can consider possible modifications of our educational program. As has already been suggested, the collaboration of many specialists would be required to decide which branches of mathematics may be useful to the citizen of the future and to decide how far one can go in teaching the *use* of mathematics, apart from its structure, much as we drive a car with little knowledge of the mechanism under the hood. It is obviously beyond the scope of this article to consider this problem in detail. Although it is clear that increased mathematical skill is desirable, there is not much point in unduly emphasizing it in an already overcrowded curriculum when one considers that in most fields the basic quantitative data which might be subjected to mathematical treatment are missing.

But this vicious circle must somehow be broken. We must not continue to be satisfied with a situation in which essential data are not collected because those who might collect them do not understand their value for lack of suitable training — a situation in which, at the same time, people are not given this training because data for its application are missing. Obviously the first step is for those who have the required skills to consider problems outside their accustomed field and to direct the accumulation of the data which they may require.

A specific program for further development along these lines must necessarily be tentative and incomplete. It is

(Continued on page 444)

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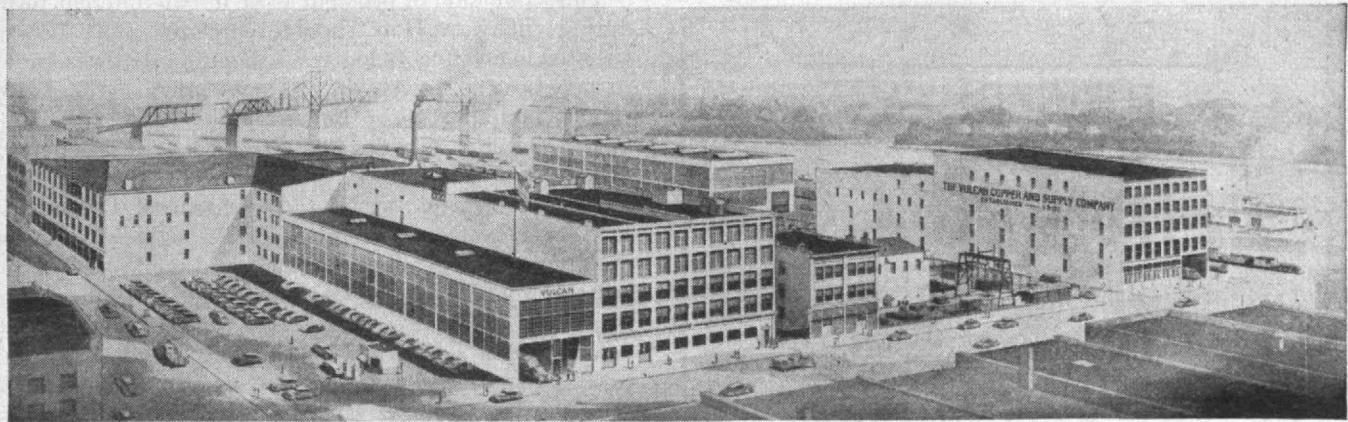
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THE SCIENTIST'S SOCIAL RESPONSIBILITY

(Continued from page 442)

always difficult to predict the results of research. Such experience as was gained in the analysis of military problems indicates that the first step, the selection of problems for study, is itself one of the most difficult problems. On the other hand, experience has also shown that valuable results may be obtained as unexpected incidental by-products of studies that fail of their primary aim.

A first step would surely be an attempt to formulate a series of problems of general interest involving more than simple arithmetic. If even a few people set about the formulation of such problems, the nature of these problems would be a valuable guide to further development of a research program. Here are three illustrations:

(1) The expected yield per acre is known for each part of a certain large tract of land, as well as the increase in the yield of each part due to the application of fertilizer in various quantities. How should a given quantity of fertilizer be distributed so as to maximize the crop?

Once stated in these terms, any mathematician would be able to solve this problem using the methods of the calculus of variations. But the formulation of the problem in these terms is probably beyond most farmers, and few mathematicians would think of bringing the solution, uninvited, to a farmer. Perhaps the problem is not well formulated from a practical point of view, but a discussion of the point might reveal other soluble problems that are of practical importance.

This same kind of problem arose in two different forms during the war. How should searching effort be distributed in an effort to locate a submarine that was known to have been at a given place at some previous time? How should bombing effort be distributed over targets of varying productivity to maximize the loss of production? These important military problems were formulated and solved, in principle at least, by scientists. Professional military men seemed unaware of the value of this formulation or the possibility of a general solution. The general solution is, of course, only a first step toward eventual maximum practical applicability, which can come only as a result of a continued interchange of ideas between practical and theoretical specialists, but once a beginning is made, there is at least the hope of eventual radical progress.

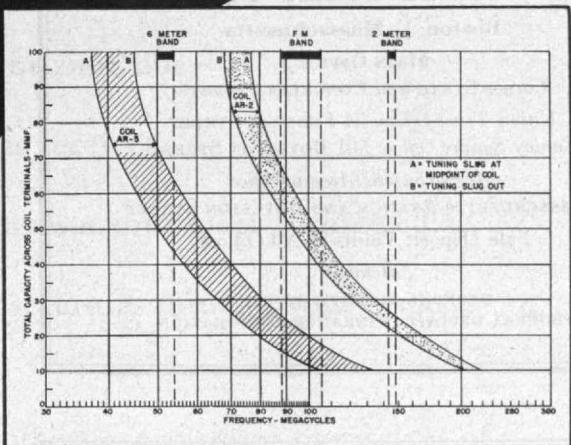
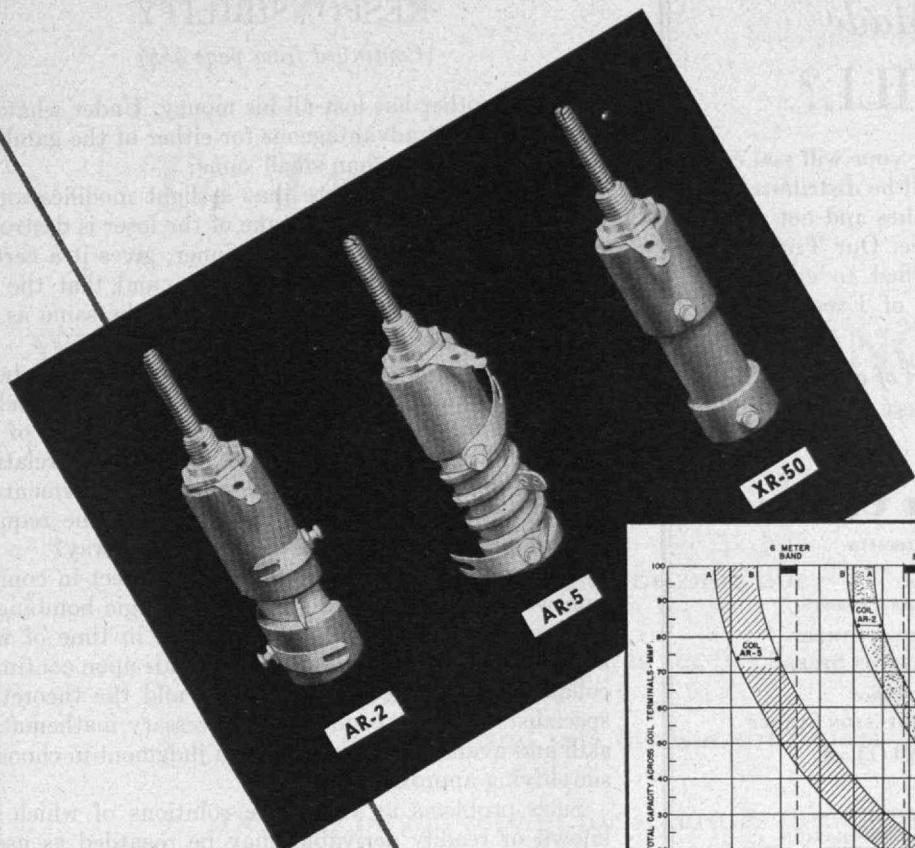
(2) Two gamblers have agreed to play a game until
(Continued on page 446)

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THE SCIENTIST'S SOCIAL RESPONSIBILITY

(Continued from page 444)

one or the other has lost all his money. Under what circumstances is it advantageous for either of the gamblers to risk large rather than small sums?

It is interesting to note that a slight modification of this problem, in which the stake of the loser is destroyed rather than transferred to the winner, gives it a certain similarity to combat between armies, and that the answers to this modified problem are not the same as the answers to the original problem.

(3) An industrial system may be regarded as being made up of an arbitrary number of subdivisions, each of which supplies a fraction of its product to each of the other subdivisions. How can these interindustry relationships be formulated so that the altered requirements of each subdivision may be calculated, when the requirement for end-products is altered in a given way?

This problem, also, has its military aspect in connection with estimating the effects of strategic bombing or the conversion of an industrial system in time of war, but here again useful application depends upon continued collaboration between the practical and the theoretical specialists who can combine the necessary mathematical skill and available data with sound judgment in choosing simplifying approximations.

Such problems as these, the solutions of which are known or readily derivable, may be regarded as useful exercises that constantly keep before the student the generality of the methods involved. An attack on more complicated problems, the solutions of which cannot be given in a few lines and on which considerable research is required to obtain basic data, might also be attempted. In a preliminary effort to develop a useful body of knowledge, it would be desirable to choose several fields of interest and to formulate problems fairly generally, so that a wide range of specific subproblems might be revealed in the course of the investigation. Three more problems are listed below by way of illustration. Two of these are old problems and have been under the scrutiny of specialists for generations. The object of a review of available data and of conclusions already reached would be to discover whether a reformulation of certain aspects in more quantitative terms appears feasible.

(Concluded on page 448)



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THE SCIENTIST'S SOCIAL RESPONSIBILITY

(Concluded from page 446)

■ The first of these questions is in the field of public health. To what extent have people in various periods of history made use of the currently available knowledge of health and disease, and to what extent did accidental factors, such as the changing population of rats in our cities, play an equally important part in public health? A review of this subject from the point of view of the trained analyst should be of interest to every educated person, but particularly to scientists concerned with legislation affecting the control of new knowledge. What have been the typical blunders in the past, and how might they have been avoided?

A second example deals with a combination of economics and government. How has the productivity of economic systems varied from one period of history to another, and to what extent has productivity depended on the application of technical knowledge? In other words, to what extent have we profited materially from the results of research and invention?

A third and final example is taken from the field of national security. The war has amply demonstrated the vulnerability of cities to aerial attack, particularly with atomic bombs, and although there may be arguments about the military value of such attacks, there is no disputing their effectiveness in producing human suffering. Although we all hope that we and our children will escape future Hamburgs and Hiroshimas, this hope should not blind us to our vulnerability. This vulnerability can be decreased by dispersal. Here, then, is the question: What would be the national bill for the dispersal of our cities and industrial concentrations to the point where vulnerability to aerial attack would be materially reduced, and could this dispersal be designed in such a way as to provide incidental economic and social benefits which would give it the aspect of a desirable goal, rather than a mere flight from destruction? This problem, of course, is not one that could suitably be undertaken in all its complexity by a small research group at a university, but it is one that could be initiated under such circumstances, particularly with the object of developing methods of attack, of developing skill and imagination in quantitative planning.

This discussion illustrates possible first steps of scientists who feel that their discoveries and skills have put upon their shoulders at least a share of the responsibility for the intelligent application of new knowledge. What the results of such first steps would be, no one can foresee, but at least those participating in the work would benefit from a deeper understanding of the nature of the difficulties which their students will have to face during the years to come.

If there is any hope that men can live together constructively and in peace, this hope lies in men's ability to see clearly the nature of the problems confronting them and to bring to bear on the solution of these problems the full knowledge of the intellectual and physical means at their disposal. If the scientist, because of his training and experience, can help to educate men to this end, he must not fail—he must not be allowed to fail—in the fulfillment of this, his social responsibility.



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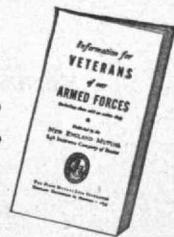
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HIGH ROAD TO BROOKLYN

(Continued from page 422)

much longer spans than that at Brooklyn are to be as satisfactory. Without the benefit of present-day experience, they guessed well at the best ways to care for the resultant stresses and deflections.

Although Roebling and those of his generation may not have realized how much they were forced to guess in their design, they certainly built successful structures, which would be respected by today's engineers. As outstanding bridges of the time may be mentioned the Britannia Tubular Bridge, a pair of wrought-iron plate girders (23 to 30 feet deep), embracing two channel spans of about 460 feet and smaller adjacent side spans; the classic 580-foot suspension bridge of bar link cables at Menai Strait, Wales, then soon to celebrate its 50th anniversary; the ill-fated Tay Bridge, two miles long, then under construction; and, in America, the Roebling bridges previously mentioned and the famous Eads Bridge at St. Louis, then under construction.

The diagonal stays of the Bridge contribute to its rigidity. In computing the anchor chains Roebling blandly assumed that the stays took nearly one half of the vertical load of the Bridge, although possibly there is never a combination of temperature and relative elasticity of stays and cables that results in this assumed division of load between them. The use of diagonal stays was considered at the Tacoma Narrows Bridge in an attempt to restrain the vibrations that in 1940 caused its failure.

The cables of today's suspension bridges are fixed at the tower tops, causing the resultant differential of cable tension between side and center spans to be taken by the bending of the steel towers. Roebling had to make his towers of masonry, a material unsuitable for the stresses of bending. He had tried to balance cable tension of side and center spans by pendulum attachments in his Monongahela Bridge at Pittsburgh. It is readily apparent that such an arrangement was impracticable for the larger cables at Brooklyn. The rollers under the cradles at the Bridge towers have long since frozen in rust, and the Bridge is therefore three independent suspension spans.

One reason for the success of Roebling and his successors in designing a safe structure, despite the limited knowledge of the time, results from the conservatism of design and the generous assumptions of the live loads to be carried: eight tons for a one-horse truck, 30 tons for a two-horse one. "Two horses usually haul fourteen bales of cotton, four hogsheads of tobacco, or twenty-five barrels of flour or sugar. . . . One horse . . . sometimes . . . as many as forty barrels. . . ."

Overloaded as were the pitied horses of the quoted contemporary account, their burdens came nowhere near those assumed for the floor system of the Bridge. The basic concentrated load used for the George Washington Bridge was a 25-ton truck. As to the distribution of the basic live load, and the safe working stresses for various ratios of live to dead loads, modern structural designers are still in search of a truly rational method.

Not all designers of the period were as conservative as the designers of the Brooklyn Bridge. Frightful bridge disasters were too common as the newer steels came into use. "Not less than forty bridges fall in the United States every year," a report of the time states.

(Concluded on page 452)

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HIGH ROAD TO BROOKLYN

(Concluded from page 450)

Three years before its opening, New Yorkers who doubted the safety of the East River Bridge read in *Harper's Weekly* of the failure of the Tay Bridge in Scotland, in which scores perished. But Colonel Payne of the staff of their own Bridge engineers reassured them. Whereas "the Tay Bridge," he said, ". . . was not strong enough to resist the wind and wave pressures to which it was exposed," the strength of the East River Bridge was to be "five times as great as the force of a side wind against it."

(To be concluded)

INVESTING IN SCIENCE FOR THE FUTURE

(Continued from page 426)

unless such a group were willing to go further. It will be necessary to seek out and encourage promising young scientists and engineers who have projects which they might like to develop commercially. When such men are found, they will need associates who have considerable business experience and exceptional managerial skill.

To clarify what I have in mind here, we might look at the other side of the shield for a moment. Let us consider the Radiation Laboratory at the Massachusetts Institute of Technology. During the war, this university laboratory became one of the leading research centers in the world in the field of electronics. It specialized particularly in radar. The laboratory assembled an extremely able group of younger men from all parts of the country. A year ago, if you had interviewed many of these men, you would have found that a substantial number of them would have liked to start off for themselves. During the course of their war work they had uncovered a wide variety of new developments which had promising practical applications. When the war ended these men were suddenly deluged with offers from established industrial concerns to join their research staffs. As far as I know, there were no talent scouts ranging the laboratories at that time who were interested in getting new scientific enterprises launched.

Our educational institutions had, by and large, made no effort in their original training programs to encourage these men to start off for themselves or to suggest ways for so doing. Many of the younger men, nevertheless, had a nostalgic feeling that they would like to be starting something of their own; but when it came to a choice between a secure and clear-cut job that was offered to them and a much more hazardous and uncertain undertaking of forming an enterprise of their own, seeking capital, getting the proper business advice, and then going into business, they followed the line of least resistance.

I think that the situation is not incomparable to that which exists today in the publishing business. The modern publisher does not merely wait until a good book is planted on his desk. He thinks up ideas himself for books; he keeps in contact with the most promising young writers; he gives them fellowships and advances royalties; he nurses them along to a point where some of them ultimately become important producers. Of course, many of them never do, and, therefore, he has to diversify his risks by following this procedure with many different people.

(Concluded on page 454)

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INVESTING IN SCIENCE FOR THE FUTURE

(Concluded from page 452)

What type of new scientific ventures need support at the present time? A recently organized casting company is one illustration of the kind of venture that I have in mind. The "lost-wax" method of casting has been used for centuries, but it had never been possible to make castings of high-melting alloys. Scientists discovered a method of making ceramics which would stand very much higher temperatures. An ingenious engineer decided to start a small company which would make precision castings of all types, including in particular the castings of high-melting alloys. This field is by no means fully explored; it is unquestionably an expanding one.

A field which will undoubtedly have many further important developments is powdered metallurgy. The new scientific advances which have been taking place in this field could unquestionably be exploited by small new companies organized to develop certain specialized applications which have not previously been utilized.

Another type of venture which might be explored is the scientific application of developments in marine biology to certain well-known standard commercial products. It has been discovered, for example, that oysters can be economically and effectively grown on trays, and there are indications that somewhat similar techniques could be utilized in the growing of lobsters and other sea foods. If an enterprise were established to make commercial applications of the scientific advances that have taken place in marine biology, it might revolutionize existing methods.

The industrial application of the new technique of high-speed vacuum pumps affords another illustration. The National Research Corporation has been able to

produce by vacuum distillation expensive organic materials, the valuable properties of which would have been destroyed if distilled at temperatures which would be necessary in the absence of high vacuum.

Still another recent illustration is the growing of vegetables in water or sand enriched with the necessary nutritive salt — the art which has come to be known as hydroponics. Developed first in California, it was used during the war for the production of vegetables on some Pacific islands where ordinary gardening was impossible.

I believe, in short, that there are many opportunities for the profitable employment of venture capital in financing new scientific enterprises; and I very much hope that investment groups will rise to this challenge and provide new methods and techniques of furnishing both capital and business help to the scientific entrepreneurs of the future. The burst of applied scientific development that has occurred during the war has demonstrated conclusively that we are not a mature and stagnant economy. Barriers to further progress lie only within ourselves. As the late President Roosevelt declared in 1944: "New frontiers of the mind are before us, and if they are pioneered with the same vision, boldness, and drive with which we have waged this war, we can create a fuller and more fruitful employment and a fuller and more fruitful life."

One way in which these objectives can be achieved is to launch new enterprises of a scientific character. Every encouragement, therefore, should be given to promising young men with new ideas to start enterprises of their own. They need guidance, capital, managerial advice, and many other services. I believe that under the proper auspices the establishment of specialized investment companies to take care of this vital need would perform an extremely important function in the American economy today and help us to renew our faith in enterprise.

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TREASURED among your Tech memories are many occasions when you have sung the rollicking words and the refrain, "Take me back on a special train to the glorious Institute," written by our late beloved "Ike" Litchfield '85. As the years have passed—whether you are the oldest or the youngest alumnus—and especially during the war years—"I wish that I were back again" has acquired a new and broader significance. No longer is it merely a part of a song. It is the essence of the desire which you share with other Alumni to come "back to Tech" . . . to revisit the "'ology, Varsity Shop" . . . to satisfy that yen "for the inspiration of a technological toot" . . . to see for yourself how Technology has progressed since you last strolled through its corridors.

This year, make that wish a reality. Come back to Tech for Alumni Day on June 8. Be one of the Alumni to return to Tech for the first Alumni Day in M.I.T. Buildings since Pearl Harbor. Recapture the enthusiasm of "those happy days of ours," and, as the "Stein Song" says, renew the "faith and hope a-plenty" that you had when "frank and twenty." So . . . mark your calendar "June 8, M.I.T. ALUMNI DAY" . . . and plan your business engagements so that you can make that wish to be "back again" come true.

For program highlights, see page 430 in this issue.

Alumni Day . . . Saturday, June 8, 1946

"Arise! Ye Sons of M.I.T."



TECHNOLOGY MEN IN ACTION

THE ALUMNI FUND — ITS PROBLEMS AND GROWTH

Fund Tops 13,000

The M.I.T. Alumni Fund recently closed its sixth year with 38 per cent of its 34,500 Alumni contributing a total of over \$200,000. These figures compare favorably with Yale, where last year 39 per cent of the alumni gave the college a total of \$331,000; and Harvard, with 35 percent giving \$186,000; although it is still far behind Dartmouth, 60 per cent of whose alumni gave a total of \$337,000, an average of over \$25 per contributor.



That's not the way our Annual Report for 1945-1946 read. The figures given in that report were 10,009 Alumni, or 29 per cent, giving some \$165,000. A very creditable record, and a notable growth from our first-year totals. But the Report *might* have read as above if every Alumnus who had contributed at some time in the past had done so again in this sixth year. Allowing for deaths, the totals would have exceeded 13,000 and \$200,000.

There is, of course, no obligation for a man to continue contributing regularly merely because he has done so once. Circumstances change, and some may find it increasingly difficult if not impossible to make a habit of giving. It is inconceivable, however, that any appreciable percentage of the 3,000 who have been "lost" from the Fund rolls are in this category. By the act of making a contribution, each Alumnus shows his sympathy with the aims and ideals of M.I.T. and his willingness to assist in furthering them. That awareness does not change. It is highly probable, therefore, that most of those who fall by the wayside do so as the result of an oversight.

You who read this contributed to last year's Fund. Many of you have already done so again this year. If you are in that swelling group, thanks! If not, won't you join it now, and not take a chance of becoming a "former" contributor?

M.I.T. MEN AT WAR

Up to April 9 over 9,514 Institute Alumni, including 37 Admirals, 8 Commodores, and 95 Generals, were reported as being in the active naval or military services of the United Nations. There were 294 Alumni who had been decorated, and 180 who had made the supreme sacrifice.

With its issue dated November, 1942, The Technology Review began publishing "M.I.T. MEN AT WAR." Although hostilities have ended, The Review plans to continue this page for the next several months in order to record information on M.I.T. men in the services which, to date, has been impossible to obtain. As a matter of convenience, promotions and corrections in the rank previously given are grouped under a single heading, "Changes in Rank." The Review Editors are greatly indebted to the many Alumni and other readers who are continuing to co-operate so helpfully in reporting inevitable errors of omission and commission which they note in these listings.

DECORATIONS

- 1915 Lacy, Clive W., *Col.*, U.S.A., Legion of Merit — for services in the Office of the Chief of Chemical Warfare Service.
- 1916 Patten, David L., *Comdr.*, U.S.N., Legion of Merit — for exceptionally meritorious conduct in the performance of outstanding services in the Southwest Pacific Area as a member of the Planning and Operations Division G-4, General Headquarters.
- 1921 Magee, Francis J., *Col.*, U.S.A., Legion of Merit.
- 1922 Nesmith, James, 2nd, *Col.*, U.S.A., Legion of Merit — for work on the Antiaircraft Artillery Board.
- 1923 Lewis, Bernard, *Lt. Col.*, U.S.A., Legion of Merit — for furnishing professional leadership to achieve exceptional records in the development of rifle grenades, hand grenades, and fuzes for both weapons.
- 1930 Cox, Gilbert L., *Lt. Col.*, U.S.A., Legion of Merit.
- 1932 Conrad, Robert D., *Capt.*, U.S.N., Legion of Merit — for exceptionally meritorious services to the country in guiding research during the war years as planning head for the Office of the Co-ordinator of Research and Development.
- 1935 Kelakos, Michael G., *Lt. Col.*, U.S.A., Bronze Star; Croix de Guerre.
- 1939 Chance, William M., Jr., *Lt. Col.*, U.S.A., Bronze Star.
- MacMillan, Latimer W., Jr., *Capt.*, U.S.A., Silver Star — for gallantry in action in Germany; Bronze Star; Oak Leaf Cluster.
- 1942 ★ Kunz, Robert C., *Maj.*, U.S.A., Posthumously awarded the Distinguished Flying Cross — for successfully evacuating twenty-four American airmen from a point behind enemy lines; Air Medal — for meritorious achievement while participating in aerial flights through turbulent weather, over hazardous and uncharted terrain, in heavily loaded and unescorted bombardment type aircraft to facilitate the gathering of vital weather data; Purple Heart.

NEW LISTINGS

U.S.A.

- 1928 Noonan, Thomas J., *Lt. Col.*
- 1940 Thomas, Norman T., Jr., *Capt.*
- 1943 Kano, Cyrus H., *Pvt.*
- McDonough, John W., Jr., *Capt.*
- Sibley, John A., *1st Lt.*
- Aronson, Joseph D., Jr., *Lt.*
- Payne, Herbert, *Lt.*

U.S.N.

- 1919 McCloskey, Lawrence C., *Comdr.*
- Goodridge, William, *Lt. Comdr.*
- 10-44 Ayling, Robert W., *Ens.*
- Adler, Richard M., *Ens.*
- Aitken, John N., *3d, Ens.*
- Apelman, Joseph S., Jr., *Ens.*
- Arkin, Shepard M., *Ens.*
- Auerswald, William H., *Ens.*
- Backofen, Walter A., *Ens.*
- Bart, Roger, *Ens.*
- Bean, Edwin T., Jr., *Ens.*
- Becker, William E., *Ens.*

★ Killed in Action

- Bockhorst, Roy E., *Ens.*
- Body, Lawrence G., *Ens.*
- Bolger, Robert J., Jr., *Ens.*
- Bott, George, *Ens.*
- Brace, William F., *Ens.*
- Bromfield, Morton S., *Ens.*
- Brown, Raymond D., Jr., *Ens.*
- Bruenner, Donald L., *Ens.*
- Brylawski, Edward F., *Ens.*
- Buckman, Ernest U., 2nd, *Ens.*
- Burke, Donald E., *Ens.*
- Burns, Andrew B., *Ens.*
- Bushnell, Sterling S., Jr., *Ens.*
- Buss, William A., *Ens.*
- Cahill, William C., *Ens.*
- Casey, William J., 3d, *Ens.*
- Chabot, James V., *Ens.*
- Chapman, Warren H., *Ens.*
- Childs, Joseph C., *Ens.*
- Chomitz, Morris A., *Ens.*
- Clarke, James W., *Ens.*
- Coe, Noel N., *Ens.*
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- Craig, James S., *Ens.*
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- Dickson, Robert R., *Ens.*
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- Dorflinger, Glen V., *Ens.*
- Doyle, Edward C., *Ens.*
- Edgerly, Stuart, Jr., *Ens.*
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- Fagot, Robert F., *Ens.*
- Finnegan, James A., Jr., *Ens.*
- Fisher, Charles J., *Ens.*
- Fleming, John H., *Ens.*
- Folsom, Deane R., *Ens.*
- Ford, Clarence T., *Ens.*
- Frazer, William R., Jr., *Ens.*
- Frederick, William N., *Ens.*
- Fried, Robert P., *Ens.*
- Friedman, Melvin W., *Ens.*
- Fuller, Frederick V., *Ens.*
- Gliedman, Monroe M., *Ens.*
- Gliedman, Richard, *Ens.*
- Goeler, Henry F., *Ens.*
- Grandfield, Stuart D., *Ens.*
- Gray, Harland A., Jr., *Ens.*
- Greene, Kermit, *Ens.*
- Gumennick, Jerome, *Ens.*
- Gunnarson, John A., *Ens.*
- Hall, Richard J., *Ens.*
- Hauser, Kenneth J., *Ens.*
- Haverback, Bernard J., *Ens.*
- Hawkes, Thaddeus A., *Ens.*
- Hayward, Winchell T., *Ens.*
- Henning, Theodore W., *Ens.*
- Herberg, William F., Jr., *Ens.*
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- Heuchling, Theodore P., *Ens.*
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- Hoag, David G., *Ens.*
- Hoffmeister, Alexander J., *Ens.*
- Huschke, Ralph E., *Ens.*
- Jackson, Hugh R., *Ens.*
- Jacques, Herbert E., *Ens.*
- Jensen, Carl P., *Ens.*
- Johnson, Harry M., *Ens.*
- Keating, Herbert G., Jr., *Ens.*
- Kelley, Daniel M., *Ens.*
- Kennedy, Seward J., *Ens.*
- Kent, Albert L., Jr., *Ens.*
- King, Frank L., *Ens.*
- Klein, Roy L., A.S.
- Knauss, John A., *Ens.*
- Koll, Richard T., *Ens.*
- Krahe, Richard L., Jr., *Ens.*
- Laboy, Joseph U., *Ens.*
- Lappin, Mason I., *Ens.*
- Lea, Lorenzo B., *Ens.*
- Levine, Melvin M., *Ens.*
- Ley, George A., Jr., *Ens.*
- Lieske, Hans A., *Ens.*
- Little, Alfred A., 2nd, *Ens.*
- Loweree, James H., *Ens.*
- Lucero, William H., *Ens.*
- Lyon, Clarence S., *Ens.*
- Lyon, Fred W., *Ens.*
- McEwan, Alexander W., *Ens.*

† Missing in Action

‡ Prisoner of War

* Died or Killed in Service

** Wounded

CHANGES IN RANK

U.S.A.

- 1915 Lacy, Clive W., *Lt. Col.* to *Col.*
- 1922 * Damon, Roger H., *Capt.* to *Maj.*
- Olivares, Jose E., *Capt.* to *Lt. Col.*
- 1926 Mankowich, Abraham, *Maj.* to *Lt. Col.*
- 1927 Ayres, Gilbert B., *Maj.* to *Lt. Col.*
- Branca, Eugene G., *Capt.* to *Maj.*
- 1931 Danforth, Dirwood M., *Maj.* to *Lt. Col.*
- Roetting, Frederick C., *Maj.* to *Lt. Col.*
- Withers, George K., *Capt.* to *Col.*
- 1932 Greep, Rudolph T., *Maj.* to *Lt. Col.*
- Safford, Franklin C., *Capt.* to *Maj.*
- Kelakos, Michael G., *Maj.* to *Lt. Col.*
- Noyes, Walter F., Jr., *1st Lt.* to *Capt.*
- Thomas, Gordon C., *Maj.* to *Lt. Col.*
- White, Norman K., *Capt.* to *Maj.*
- Hobson, Edwin L., 3d, *Maj.* to *Lt. Col.*
- 1933 Roetting, Frederick C., *Maj.* to *Lt. Col.*
- 1934 Withers, George K., *Capt.* to *Col.*
- 1935 Danforth, Dirwood M., *Maj.* to *Lt. Col.*
- 1936 Roetting, Frederick C., *Maj.* to *Lt. Col.*
- 1937 Safford, Franklin C., *Capt.* to *Maj.*
- 1938 Kelakos, Michael G., *Maj.* to *Lt. Col.*
- 1939 Noyes, Walter F., Jr., *1st Lt.* to *Capt.*
- 1940 Thomas, Gordon C., *Maj.* to *Lt. Col.*
- White, Norman K., *Capt.* to *Maj.*
- Hobson, Edwin L., 3d, *Maj.* to *Lt. Col.*
- D'Angelo, Joseph E., *1st Lt.* to *Capt.*
- Bayer, Joseph, *T.5* to *T.3*.
- Chance, William M., Jr., *Maj.* to *Lt. Col.*
- Curgan, Mark N., *Capt.* to *Maj.*
- Heroman, Lee C., Jr., *Capt.* to *Maj.*
- Loesco, Ezekiel F., *Capt.* to *Maj.*
- Meals, Robert W., *Lt. Col.* to *Col.*
- Olson, Arthur R., *1st Lt.* to *Capt.*
- Evans, Giles L., Jr., *Capt.* to *Lt. Col.*
- Noonan, Frederick F., *Capt.* to *Lt. Col.*
- Norton, Augustus P., Jr., *Pfc.* to *Sgt.*
- 1941 Bises, George R., *2nd Lt.* to *1st Lt.*
- 1943 Crook, Sydney L., *Capt.* to *Maj.*
- Emond, Alfred A., Jr., *1st Lt.* to *Capt.*
- Lacy, William R., *2nd Lt.* to *Capt.*
- Moulton, William R., *1st Lt.* to *Capt.*
- Mulhaupt, Frederick K., *2nd Lt.* to *Capt.*
- Bohr, Alexander H., *Pvt.* to *T.3*.
- Burdick, George E., *Pvt.* to *T.3*.
- Harper, William E., *Pvt.* to *Corp.*
- Johnson, John M., *Pvt.* to *T.5*.
- Little, Willard S., Jr., *Pvt.* to *Lt.*
- Losco, Fiorenzo D., *Pvt.* to *Lt.*
- Peterson, Edward H., *2nd Lt.* to *1st Lt.*
- Wood, Robert H., *2nd Lt.* to *1st Lt.*
- 10-44 Hossfeld, Theodore C., *2nd Lt.* to *Capt.*
- Lawton, Russell E., Jr., *Pvt.* to *Lt.*
- Meyer, Leonard E., *Pvt.* to *Sgt.*
- Shooshan, Robert D., *Pfc.* to *Corp.*

U.S.M.C.

- 10-44 Stevenson, Donald T., *Pvt.* to *Lt.*

CASUALTIES

- 1901 * Whitman, Ralph, *Rear Adm.*, U.S.N.
- 1922 * Damon, Roger H., *Maj.*, U.S.A. — Germany.
- 1942 ★ Kunz, Robert C., *Maj.*, U.S.A. — China.

ALUMNI AND OFFICERS IN THE NEWS

Up the Ladder

¶ J. FRANKLIN McELWAIN '97, whom the New England Shoe and Leather Association has presented with a plaque, "in recognition of his distinguished service to our association and the shoe industry."

¶ HAROLD S. OSBORNE '08, JULIUS A. STRATTON '23, ARTHUR L. SAMUEL '25, and HOWARD A. CHINN '27, all made fellows of the Institute of Radio Engineers at the annual banquet.

¶ RALPH ISLEY '25, given the commendation for exceptional civilian service, the highest honor conferred upon War Department employees, for his "outstanding achievement in the analysis and screening of requirements for high explosives, smokeless powder and raw materials; and the synchronization of estimated requirements with the construction of government plants."

¶ CYRIL S. SMITH '26, one of the five top scientists awarded the Medal of Merit for their work on the first atomic bombs.

¶ WILLIAM H. RICHARDS '27, accorded national recognition for outstanding work in agriculture as one among five farm leaders scattered throughout the country to be elected members of the Champion Farmers of America.

¶ DENNISTOUN W. VER PLANCK '28, Commander, U.S.N.R., made an honorary member of the Most Excellent Order of the British Empire for "services of the greatest value to Great Britain" during his work "degaussing in the U.S.A., more especially in regard to theory, ranging procedures, operating instructions to ships, transfer of range records from one country to the other and all matters of unification of policy. . . ."

¶ KARL TERZAGHI, former staff, 1946 winner of the Brown Medal of the Franklin Institute, "in consideration of his theoretical and technical knowledge, initiative, pioneering research and outstanding leadership in the establishment of the science of soil mechanics."

Rung by Rung

¶ WILLIAM V. McMENIMEN '03, as president of the Raymond Concrete Pile Company.

¶ EMORY S. LAND '06, Vice Admiral, U.S.N., as president of the Air Transport Association in Washington, D.C.

¶ W. ROY GLIDDEN '12, as a director of the American Society of Civil Engineers, representing District Number Six.

¶ JEROME C. HUNSAKER '12, as a director of the Sperry Corporation and its subsidiaries.

¶ PHILIP E. MORRILL '14, as president, ALFRED H. CLARKE '15 and HOWARD P. CLAUSSEN '16, as vice-presidents, thereby constituting the board of directors, of the Strongwall Mills, at Cannelton, Ind., formerly the Indiana Cotton Mills.

¶ THOMAS B. RICHEY '14, Rear Admiral, U.S.N. (Retired), as assistant vice-president of the Cargocaire Engineering Corporation, New York.

¶ ERNEST H. HUNTRESS '20, as a member of the committee on nomenclature of the division of organic chemistry of the American Chemical Society.

¶ RICHARD WHITING '26, Commander, U.S.N.R., as general patent counsel for the Navy.

¶ CARROLL L. WILSON '32, as vice-president of the National Research Corporation in Boston.

¶ ROBERT H. WINTERS '33, Major, R.C.A., Lieutenant Colonel, A.U.S., as member of the Canadian Parliament for Queens-Lunenburg.

¶ JOHN R. BURTON, Jr., '35, as director and vice-president of the National Bank of Far Rockaway, N.Y.

Page by Page

¶ THOMAS C. DESMOND '09, with "The Coming Billboard Battle" in the *Reader's Digest* for April.

¶ JOHN E. OTTERSON '09, with supervision, as chairman of the American Maritime Council, Inc., of the publication of a new book entitled *Foreign Trade and Shipping*, by the McGraw-Hill Book Company, Inc., New York.

¶ EDMUND S. WHITMAN '21, with "From the Tropics to You" in the *Official Proceedings of the New York Railroad Club* for February.

¶ EDWIN E. SPITZER '26, with "Induction Heating in Radio Electron-Tube Manufacture" in the *Proceedings of the Institute of Radio Engineers* for March.

¶ A. RUFUS APPLEGARTH '35, with "Synchronizing Generators for Electronic Television" in the *Proceedings of the Institute of Radio Engineers* for March.

¶ GORDON STEPHENSON '38, with "The Planning of Residential Areas" in the *Journal of the Royal Institute of British Architects* for February.

¶ GORDON M. LEE '44, with "A Three-Beam Oscillograph for Recording Frequencies up to 10,000 Megacycles" in the *Proceedings of the Institute of Radio Engineers* for March.

DEATHS

* Mentioned in class notes.

¶ HOWLAND S. CHANDLER '88, March 11.

¶ SUMNER B. MERRICK '88, December 31.

¶ FRANK W. ATWOOD '90, March 5.*

¶ RAYMOND B. PRICE '94, January 31.*

¶ EUGENE H. CLAPP '95, March 18.*

¶ AMADEUS W. GRABAU '96, March 20.*

¶ GEORGE D. HUNTINGTON '98, January 9.

¶ PAUL F. JOHNSON '98, March 19.

¶ WILLIAM A. KINGMAN '99, February 20.*

¶ CLYDE R. PLACE '02, March 28.

¶ M. EDGAR MASON '04, September 14.

¶ ROY W. WASTCOAT '05, February 9.

¶ THOMAS F. DORSEY '07, January 4.

¶ G. WILLIAM BAILEY '08, March 8.*

¶ LANGDON COFFIN '08, March 5.*

¶ HAROLD D. BOUNTHEAU '09, September 17.

¶ EDWIN HAJN '09, February 28.

¶ ALBERT W. ANDREWS '10, December 27.*

¶ HERBERT S. HOLLINGSWORTH '10, May 2, 1945.

¶ EARL J. W. RAGSDALE '10, February 24.*

¶ JOSEPH C. FULLER '11, February 16.

¶ MYRICK W. PULLEN '12, January 10.

¶ ALFRED E. EDWARDS '13, date unknown.

¶ PORTER H. ADAMS '14, December 4.*

¶ ADELBERT D. HILLER '14, February 19.*

¶ MARSTON HARDING '15, February 11.*

¶ CHARLES O. GIBBON '17, February 17.*

¶ CLARENCE S. TIMANUS '18, March 12.

¶ ETHEL BENEDICT GUTMAN '19, March 6.

¶ J. DONALD MITSCH '20, January 18.*

¶ HOWARD L. VICKERY '21, March 21.*

¶ JOHN F. G. GUNTHNER '23, March 21.

¶ KYHE HONG OON '23, October 17.*

¶ EVERETT S. COPRAN '30, January 7.*

¶ GEORGE I. MAGRATH '32, February 26.

¶ ALBERT M. HEINTZ '34, March 20.

¶ WALTER H. PAIGE, Jr., '38, August 1, 1944.

¶ WILLIAM G. HOLTON '41, November 25.*

¶ RICHARD H. SEABURY '41, July 7.*

¶ DOUGLAS G. FENTON '43, March 20, 1945.*

¶ RICHARD P. GALE, Jr., '45, April 9.

NEWS FROM THE CLUBS AND CLASSES

CLUB NOTES

Detroit Technology Association

For our monthly dinner meeting on March 12 at the University Club we had the pleasure of hearing Daniel L. Beck's discussion of "Aptitude Tests and Their Value To Technical Men." Mr. Beck is president of the Executive Selection Training Institute. In the last five years the necessity of selecting and training vast numbers of men and women for military and civilian requirements placed great emphasis upon aptitude tests, or their equivalent, as a method of rapid and efficient selection. It was therefore interesting to learn how these selective methods are presented and applied in the postwar period. Mr. Beck outlined the theory of question-and-answer tests and how they are used to chart individual ability, personality, and potentialities. The weighting of results by trained psychologists to guide the individual or employer and employee constitutes a forward step in the betterment of everyday human relations. It is an attempt to evaluate the greatest of all variables — the human being. Mr. Beck brought to the meeting limited sample tests, which were executed with the usual M.I.T. aplomb. (No attempt has been made to tabulate results as publicity might cause drastic revisions in the educational programs of other halls of learning.) Seriously, however, Mr. Beck's talk was very interesting and enjoyed by all present.

The following members attended: L. E. Williams '01, F. N. Phelps '13, C. F. Harrington '16, T. K. Hine '16, C. T. Ellis '17, A. C. Litchfield '17, F. B. Smith, Jr., '18, E. F. Doten '19, P. L. Hanson '21, J. M. Campbell '25, D. B. Martin '25, M. L. Ash, Jr., '26, A. E. Benson '26, J. E. Longyear '26, D. M. Sutter '26, H. F. Green '29, A. K. Stricker, Jr., '29, H. W. Chapman '30, Carl Connable '31, R. W. Wright '32, S. L. Brown '33, R. E. Cross '33, W. F. Rahles '34, T. F. Morrow '35, R. J. Meier '41, H. S. Freeman '43, and W. L. Knauer '43. — THOMAS F. MORROW '35, *Secretary*, 16894 Birwood Avenue, Detroit 21, Mich.

Technology Club of Hartford

On March 18, we had our second dinner meeting of the season at the City Club of Hartford. With but one exception, the attendance was larger than that of any previous meeting in the history of the Club, there being 66 members and guests present for dinner with several additional men coming in later and a group from the New Haven club, headed by Floyd W. Buck '29, to swell the number. The business meeting was conducted by our President, Norman J. Vile '16, who first called for a report from M. G. Wight '06, our Alumni Council representative. Mr. Wight outlined some of the recent developments in alumni af-

fairs. President Vile then asked for a report from George L. Mylchreest '10, chairman of the postwar placement committee, who gave a brief résumé of his committee's activities, indicating that it has been of assistance in the placement of 30 men so far. Mr. Mylchreest introduced J. N. Higgins '31, representing the Placement Bureau in postwar placement matters; he praised the work of our committee and urged that the good work be continued.

Floyd W. Buck, Vice-president of the New Haven Club, was next introduced to the group and extended an invitation to us to join them at their annual outing in June. President Vile appointed F. S. Atwater '38 chairman of a committee to arrange the details with the New Haven group. Assisting Frank on the committee are Frederick Almquist '23, baseball; E. C. Alden '95, tennis; and George Mylchreest, golf. Since our next meeting will be the annual meeting in May, a nominating committee, consisting of F. P. Ward '26, chairman, T. D. Green '26, and J. H. L. Giles '29, was appointed to present a slate then.

Among the members present was Millard Knowlton '18, recently retired from the state department of health after 23 years of service. Best wishes were extended to Dr. Knowlton and the hope expressed that he would continue his not-too-arduous duties as club librarian. After the business meeting, W. W. Watson, professor of physics, chairman of the department, and director of the Sloane Physics Laboratory at Yale University, was introduced and spoke on the subject, "The Future of Atomic Energy." Having been on leave of absence for two years working with the Manhattan District project, he was eminently qualified to speak on this subject, and his talk was enthusiastically received. Since the end of the war, there has been an increased interest in club affairs and greater attendance at meetings. We look forward to bigger and even better club activities in the future. — LOUIS J. PROULX, JR., '36, *Secretary*, 31 Wells Road, West Hartford 7, Conn.

Technology Club of Southern Texas

Joseph A. Tennant '13 of the local alumni group and the writer recently conferred, and he, J. A. T., is now hunting for the moss-covered gavel, with the object of polishing it up for use at a meeting of this section which may be held sometime this year (date as yet unspecified — possibly this spring, though more probably this fall). Lumber has been so scarce here, the gavel may have been sliced up and used as roof patching, *quien sabe?* Advance notice of the meeting will be given, and we hope to have in attendance Arthur E. Hartwell '09, Thornwell Fay, Jr., '09, William E. Humphreyville, Jr., '11, John R. Tabor '08, Robert N. Gay '17, and others of the earlier years, together with all those who are now in this section.

H. Kenneth Franzheim '13 is architect of the new five-million-dollar building here for Sears Roebuck and Company, as well as of the structure previously reported as costing five million, but really in the nine-million-dollar class.

It may be of interest to Alumni here to know that there are about 140 Technology men in this part of Texas. We naturally miss the presence of jovial and capable George B. Forristall '11, who served as alumni secretary here for so many years, and wish him all kinds of success in his work in Boston. — JOSEPH H. McEVOR, JR., '21, *Secretary*, 202 McGowan Avenue, Houston 6, Texas.

Indiana Association of the M.I.T.

Eleven Technology Alumni and the guest speaker, Herbert A. Minturn, (B.S. in mechanical engineering, Purdue '14) were present at the regular March meeting held at the Apex Grill on March 13.

The following members attended: G. P. Allen '16, J. H. Babbitt '17, C. L. Bouchard '36, J. R. Diver '40, T. G. Harvey '28, L. L. Holmes '23, H. C. Karcher '25, H. S. Morse '03, W. Stewart Roberts '32, R. C. Wallace '27, J. Lloyd Wayne, 3d, '96.

The annual election of officers is held in March. President Harvey appointed J. Lloyd Wayne, 3d, and Harry Karcher members of a nominating committee. This committee presented the following names, which were subsequently unanimously elected: for president, Elliott G. Peabody '22, II, Citizens Gas and Coke Utility, 49 South Pennsylvania Avenue, Indianapolis, Ind.; for vice-president, Russell Fanning '30, VIII (Naval Ordnance Plant), R. R. 11, Box 24-W, Indianapolis, Ind.; for secretary-treasurer, John H. Babbitt '17, I (Baltimore and Ohio Railroad Company), 3734 Carrollton Avenue, Indianapolis, Ind.

Mr. Minturn told us how the ore carrier *George M. Humphrey*, with a cargo of 12,000 tons of iron ore, was hit by an empty freighter, on the foggy, still dark morning of June 15, 1943, while the *Humphrey* was proceeding westerly through the Strait of Mackinac. Mr. Minturn was a witness to a part of Cappy John Roen's salvaging operations. It had been predicted that it would be impossible to raise this vessel, which had sunk in water 80 feet deep and 55 degrees in temperature. The raising was accomplished by placing a large barge over the sunken ship and lacing the two craft together. Then water was pumped into the barge until it had sunk about eight feet. The connecting cables were tightened, and the barge was emptied. This raised the *Humphrey* a few feet. She was then moved into shallower water, where the operation was repeated. Later two barges were required, one on either side of the *Humphrey*, until about three feet of her hull projected above the water. After the gaping hole had been temporarily patched, the *Humphrey*

was towed to Cappy Roen's shipyard at Sturgeon Bay. Some \$250,000 was spent in raising and repairing the ship, which has a value nearing the million dollar mark.

Our regular meetings are held on the second Wednesday of the month. All M.I.T. men are welcome and are urged to attend the meetings. — JOHN H. BABBITT '17, *Secretary*, 3734 Carrollton Avenue, Indianapolis 5, Ind.

Technology Club of New York

After some 20 years of association with editors, writers, syndicated artists, and plain advertising men, I shun the thought of becoming addicted to their common complaint. They observe, and rightly so, that most writers become overimbued with their own literary accomplishments and soon find themselves spinning a philosophy of life which very few of their followers are interested in hearing about. They write good articles, but mostly for their own entertainment and consumption. So with that off my chest, I will now make another feeble attempt to bring you up to date on the doings of the Technologists of New York.

During the week of the Chemical Show, some 40-odd chemists and chemical engineers gathered at the Engineers Club, presumably to further the interests of the profession, but from a glance over those in attendance, I suspect there was plenty of fun to be had in between the slide-rule sessions. Although your humble servant was off the beam and didn't know in advance that it was to be held, George Dandrow '22, in his usual efficient manner, forwarded me the list of those in attendance. I rather suspect that R. G. Macdonald '22 engineered most of it, for Mac, as secretary of the Technical Association of the Pulp and Paper Industry, does a mighty fine job of keeping things stirred up in the pulp and paper industry. But when Colby Bryden '22, Sax Fletcher '18, Larry Flett '18, Bill Keplinger '24, and Bill Mueser '22 sit in on a party, it's almost a sure sign that a good time is in the making. Since there were so many visitors in the city that week, I record them here with their business connections. The complete list follows: Allen Abrams '15, Marathon Paper Mills Company; Solomon Baker '39, Rogers Corporation; H. T. Barker '27, Bird and Son; H. W. Bialkowsky '28, Weyerhaeuser Timber Company; Colby W. Bryden '22, De Laval Separator Company; John Buss '26, Provincial Paper; S. A. Brown '28, Rogers Corporation; John B. Calkin '32, Union Bag and Paper Corporation; C. G. Dandrow '22, Johns-Manville Corporation; Foster Doane '20, Sandy Hill Iron and Brass; R. T. Emerson '32, Manifold Supplies Company; Sax Fletcher '18, J. O. Ross Engineers; L. H. Flett '18, National Aniline; R. T. Greep '34, S. D. Warren Company; J. J. Healy, Jr., '21, Monsanto Chemical Company; M. W. Heden '10, Racquette River Paper Company; W. L. Keplinger, Jr., '24, Johns-Manville Corporation; A. C. Lamoureux '26, Dennison Manufacturing Company; D. W. McCready '24, University of Michigan; R. G. Macdonald '22, Technical Association of the Pulp and Paper Industry; K. J. Mackenzie '28, Eastman Kodak Company; A. R. Marshall '26, Union Bag and Paper Corporation; W. H. Mueser '22, Moran,

Proctor, Freeman and Mueser; John L. Parsons '17, Hollingsworth and Whitney Company; E. N. Poor '32, American Cyanamid Company; R. J. Proctor '28, Fitchburg Paper Company; W. E. Rand '33, Sun Chemical and Color Company; S. H. Reynolds '22, Crucible Steel Company of America; A. R. Savina '30, American Cyanamid Company; P. J. Shirley '38, Penick and Ford; S. M. Silverstein '21, Rogers Corporation; J. N. Stephenson '09, Pulp and Paper Magazine of Canada; R. W. Van Kirk, Jr., '18, Penick and Ford; G. R. Wadleigh '97, consulting engineer; C. R. Westaway '33, Ingersoll-Rand Company; T. R. Weymouth '97, consulting engineer; D. B. Wheeler '25, Union Bag and Paper Corporation; Nelson F. Wilmot '26, Mathieson Alkali Works; W. S. Wilson '07, Monsanto Chemical Company. And so from the above attendance you can judge, of course, the quantity and quality of the luncheon.

The board of governors held an important meeting last month, discussing, among other things, the form, time, and place of our next golf outing. Nothing has yet been announced, but President Dandrow has much under the hat on this subject. We will let you in on the secrets in ample time to gather together your sport clothes, rusty irons, and spiked shoes and take yourself out to some near-by cow pasture. Page Willie the Meuse, I say, Sir.

Sam Reynolds and his membership committee have been going to town in a big way. I asked Mrs. Humphreys to give me the latest count last week, and taking a round figure for quick calculation, we are crowding up on the 500 mark. How's that George? New members elected in February are as follows: John C. Austin '36, Thomas M. Chadwick '33, E. Kenneth Clark '20, Rolf Eliassen '32, Warren T. Ferguson '22, Harry L. Havens '09, Walter W. King '09, James W. McDonald, Jr., '20, Percy P. Pratt '23, Richard F. Shea '24, Nicholas Shoumatoff '39, Edward R. Stevens '28. On behalf of the board of governors, gentlemen, your Secretary is delighted to have you with us. Not to preach to you in particular — but remember you get out of an organization about what you put into it. So I hope you will derive a lot of good, wholesome fellowship from our Club and become active members in every sense of the word.

Jack Fruit '02, chairman of our re-employment committee, states that business is picking up and that he has had several good live-wire prospects for jobs. Also, employers are approaching him more in search of men. Any Alumnus who reads this column, kindly help us along by listing with Jack any vacancies you may have.

Visiting firemen during the month were as follows: Lester F. Hoyt '13, R. H. Bolt, faculty, W. H. Callahan '26, E. H. Huntress, faculty, E. V. Piel '38, A. W. Morin '31, R. D. Earle '28, W. H. James '40, P. O. Crawford, Jr., '39, A. J. Houston '22, and Henry Shore '24. Well, so long until next time. If you have read thus far, please accept my thanks. — WILLIAM W. QUARLES '24, *Secretary*, McGraw-Hill Publishing Company, 330 West 42nd Street, New York, N.Y. WILLIAM L. KEPLINGER, JR., '24, *Publicity Committee*, care of Johns-Manville Corporation, 22 East 40th Street, New York 16, N.Y.

M.I.T. Club of Northern New Jersey

As at the beginning of this season, the New Jerseyites are still riding high, with a meeting at the Essex House in Newark each month. At the February gathering practically everyone was in favor of the dinner type of meeting as compared to rustling your own grub and then coming in to hear a speaker. Eating together gives an opportunity for good fellowship that you just can't get in any other way.

Our next dinner meeting is the March 26 one on color photography. The speaker is John A. Tiedeman, director of the education department of Agfa Ansco; he is bringing along slides and movies and no doubt a few well-chosen jokes for the occasion. We'll give you a blow-by-blow account next month. This is going to be a family night, and the wives, sweethearts, and kiddies are all invited to have a good time. It will be the first family affair of the year. Clayton Grover '22 is expected to be on hand to lead the singing, and Wally Wise '34 is trying to get an accordionist to furnish sweet music during the dinner hour. We don't mean that Clayton Grover's efforts will produce any less sweet music — but there might be a subtle difference.

In April, Professor Ivan (pronounced E-e-von) Getting '33 from the Institute will be down to give us the lowest of the low-downs on radar and some idea of how it will affect us in our private lives. As you all know, Ivan was active in the Radiation Laboratory on fire control work during the late war. He's an authority on that subject and has some good yarns to spin. We are looking forward to this occasion. The Club will end its year's activities with a picnic in May. It's to be an all-day affair with golf in the morning on a course all to ourselves, a picnic with loads and loads to eat from noon till night, and mild athletic events during the afternoon. Wally Wise, H. D. MacDonald '22, Charlie Roche '23, and Vic Duplin '31 are assuming the major chores of getting this affair arranged down to the last gnat's eyebrow. Before we leave the subject of programs, we must put in a little expression of gratitude to Professor Voss '32 for his wonderful talk at the February meeting. It was excellent, superb, and all that. He told his tale, and the boys just sat there and itched for more. It was one of the most entertaining and instructive talks we've heard this year. Other clubs might take note of this.

We've mentioned before that the Club was considering the adoption of a constitution. Such an instrument (possibly of torture) has been drawn up and approved by the executive committee at its meeting on March 7. Its adoption was voted on at the March 26 meeting. Copies have been sent to the active members in preparation for this vote. Thus our existence may be legalized after that date. The "Roster" or "Bluebook" previously mentioned was discussed at the executive committee meeting and has been approved. This roster will list the present active membership of the Club by class, by company affiliation, and alphabetically. It will be financed by advertising contained in the booklet, and distribution will take place next fall to the complete mailing list of over 1,800 members. We think this little document will be

a very useful implement for promoting activity within the Club and ought to help increase the active membership list.

Oh, yes. The end of the active year is nigh, and the horrid subject of officers for the ensuing year has come up again. The executive committee stepped firmly to the fore and has appointed a nominating committee. The unfortunates were: G. A. Chutter '21, chairman, A. R. Brooks '17, G. M. Warner '91, C. E. Roche '23, Kebe Toabe '15, and H. D. MacDonald. The jury was to meet and present the names of those indicted at the time of the March 26 meeting. Under the proposed constitution the officers are somewhat changed, and there would be only the following: president, vice-president, treasurer, secretary, and three members of the board of governors. Of course this time nine members of the board would have to be selected, since it would be starting from scratch. — FRANK O. PIERSON '29, *Secretary*, 15 Wyndehurst Drive, Madison, N.J. JOSEPH R. PERKINS, Jr., '39, *Review Secretary*, 341 North Fullerton Avenue, Upper Montclair, N.J.

Technology Club of Philadelphia

Ubiquitous Edwardes S. Petze '28, our newly elected vice-president in charge of programs for this year, has announced an interesting panel of speakers for the next meeting. Punch served at 6:30 p.m. will open the dinner meeting on Tuesday, May 21, at the University Club at 16th and Locust Streets. Our principal speakers will be Professor Erwin H. Schell '12, Head of the Department of Business Administration, Henry W. Jones '26, the Atlantic Refining Company's manager of industrial relations, and Robert E. Worden '36, who is associated with John I. Thompson and Company and formerly was personnel manager for Campbell Soup Company. Dudley E. Bell '17, Club President in 1927, will perform a mind-reading act for our entertainment. Mrs. Bell will be his assistant. The thought has occurred to your scribe that many of our government agencies might find a similar accomplishment helpful for ascertaining governmental policies.

We were all sorry to read of the sudden death of Earl J. W. Ragsdale '10 on February 24. At the time, Colonel Ragsdale was chief engineer for the Edward G. Budd Manufacturing Company after more than 25 years of service with that company. He had promoted the use of four-wheel automobile brakes and invented the shotweld system of welding stainless steel.

Our membership activity has reached a record high with the present enrollment of 266 paid and active members. Twenty-one Alumni have joined the Club since the supplement to our directory was printed on the January dinner program. Many of these men are newly arrived in the Philadelphia area and recently back from the war. The Club welcomes the following Alumni: N. D. Rand '00, Rupen Eksergian '14, E. F. Britt '24, W. L. Morgan '24, R. E. Cernea '25, C. M. Cooper '25, R. N. Wheelock '25, L. W. T. Cummings '26, G. F. Barnett '34, D. W. Gaston '37, D. A. Richardson '37, R. M. Westfall '37, J. T. Wilber '38, W. F. Corl, Jr., '39, M. C. Wardle '39, J. W. Blattenberger '40, C. W. Eckmann '42, S. N. Feldman '44, T. C. Chen '45, J. H. Geyer '45, and K. V. Kratochvil '45.

For information about Alumni in the Philadelphia area, call JEFFerson 0642. — ROBERT M. HARBECK '28, *Secretary*, Fidelity Machine Company, 3908 Frankford Avenue, Philadelphia 24, Pa. *Assistant Secretaries*: SAMUEL K. McCUALEY '41, 288 Copley Road, Upper Darby, Pa.; FRANK S. CHAPLIN '32, 822 Glendalough Road, Philadelphia 18, Pa.

M.I.T. Club of Western Pennsylvania

Our third meeting for the year 1945-1946 was held on February 20 at 6:30 p.m. at the University Club. Our Club President, Mr. Bossert '20, gave out the welcome news that tentative arrangements had been made to have Dr. Compton visit us, possibly on May 18, although this date was subject to change. Since Dr. Compton's visit would be the outstanding event in the history of the Club, extensive plans were being made for the occasion, details of which will be given out at a later date.

After the reading and acceptance of the minutes of the previous meeting, it was announced that the club registrar, Aaron Redcay '34, had moved from this area. For the balance of the year his duties would be assumed by the Secretary. Dr. Spooner '09 and Professor Lang '09 reported briefly on the activities of the scholarship and placement committees, respectively, after which we had the pleasure of listening to Dr. Shoupp, manager of the electronics department of the Westinghouse Research Laboratories, who talked about radar. Dr. Shoupp's exposition of radar principles and wartime developments in this field was extremely interesting as well as being ably and clearly presented.

The following members attended: W. Edgar Reed '97, H. L. Bodwell '98, C. H. Shivers '01, G. A. Morrison '09, W. U. C. Baton '04, Thomas Spooner '09, H. L. Lang '09, J. J. Strachan '13, H. H. Hall '14, C. T. Blackmore '15, J. D. McManus '17, P. Y. Hu '17, R. G. Lafear '19, T. W. Bossert '20, G. N. Reed '23, E. M. Barnes '23, E. L. Chappell '24, F. W. Waterman, Jr., '25, N. C. Hill '26, M. M. Greer '26, R. D. Hoak '28, J. L. Thistle '32, H. L. Johnson '32, J. D. Northup '32, P. R. Toolin '39, S. C. Johnson '39, F. C. Moesel '40. — HARRY L. JOHNSON '32, *Secretary*, 1215 Savannah Avenue, Pittsburgh 18, Pa.

Washington Society of the M.I.T.

At its March meeting on the 14th the Society had an experience rare in the annals of the group. We were exposed to the smooth, spellbinding ability of a labor leader talking on "Labor's International Role."

Tall, lean Harry Read, Assistant Executive Secretary-Treasurer of the C.I.O., led the fellows tranquilly through the C.I.O. activities in the United Nations Organization charter formation, showing that Labor, the National Association of Manufacturers, and the United States Chamber of Commerce had to sit down together and co-operate before various economic clauses were formulated and included in the U.N.O. charter. "The charter is like the Declaration of Independence," said Read, "except that 150 years ago we had 13 sovereign peoples with a single language.

Ideas only had to be integrated. The U.N.O. has 49 nations, nearly as many languages, but with the same general sort of working agreement as the objective." It took five years to complete and pass the Declaration of Independence and the Bill of Rights; so, we were reminded, "Don't be impatient for instant results in U.N.O. matters."

We were told about the World Federation of Trades Unions, representing 35 nations and 60 million workers. This conference stresses finding areas of agreement, consolidating them, then studies to broaden the areas. Bargainer Read, who philosophized, "Peace is the prevalence of justice among men," hit a true-sounding note, "We must learn to bargain collectively, nation with nation, as labor now does with management."

Present were: 1890: J. G. Crane; 1893: P. H. Thomas; 1897: P. L. Dougherty, F. A. Hunnewell; 1904: G. N. Wheat, A. M. Holcombe, F. W. Milliken, Lewis Newell; 1905: O. C. Merrill, E. F. Kriegsman; 1907: J. P. Alvey; 1911: W. H. Martin; 1912: A. M. Pedersen; 1915: A. D. Beidelman; 1916: W. H. Blank, F. P. Upton, W. E. Wentworth; 1919: L. J. Grayson, E. M. Kenison, M. P. Smith; 1920: John Nolen, Jr.; 1922: H. H. Fisk, W. K. MacMahon, J. R. Morton, Jr.; 1924: H. B. Stevens; 1925: H. B. Swett; 1926: T. L. Soo-Hoo; 1927: E. G. Cowen, G. E. Thomas; 1928: A. E. Beitzell, G. D. Mock; 1930: A. F. Bird, J. R. Bloom, C. W. Maskell, J. A. Mathews; 1932: Arthur Lowery, F. M. Moss, R. W. West; 1936: R. I. Ulans; 1937: G. B. Hunter, Jr.; 1940: Alvin Guttag; 1943: W. J. Cochran; 1945: W. R. Hamon. — FRANK W. MILLIKEN '04, *Secretary*, 613 Greenwich Street, Falls Church, Va. ALBERT F. BIRD '30, *Review Secretary*, 5070 Temple Hills Road, S.E., Washington 20, D.C.

Worcester County Alumni Association

A dinner meeting of the Association was held in the Aurora Hotel in Worcester on February 27. Orville B. Denison '11, President, announced the appointment of a nominating committee consisting of Ernest P. Whitehead '20, chairman, Howard F. Atwood '32 from Bolton, Robert H. Brown '22 from Leominster, Fred E. Mader '32 from Shrewsbury, and Carl H. Wilson '34 from Webster. Professor Charles E. Locke '96, Secretary of the Alumni Association, spoke briefly on alumni affairs, declaring that there has been an encouraging revival of interest since the end of the war. He urged members to attend Alumni Day in Cambridge on June 8.

Dr. and Mrs. Compton were to have been with us but are now expected to be our guests on May 28 at the Worcester Country Club. In the President's place, Edward L. Moreland '07, Dean of Engineering, told the inside story of how Japan looked to the eyes of one of the nation's leading scientists, who, as leader of the Scientific Intelligence Survey for the United States Government, arrived in Japan only eight days after the first American troops. During his three and one-half years' absence from Technology, Dean Moreland had been executive officer of the National Defense Research Committee and expert consultant to the Secretary of War. He was

with Dr. Compton in Manila on V-J Day and afterward went on to Tokyo.

"It was not the atom bomb that made the Japanese people quit," he told us. "It was the Emperor. . . . I am convinced that if the Emperor had willed it, the Japs would have continued fighting to the last man. The atomic bomb was simply a face-saving peg to hang their defeat on." He described the effects of both atomic and incendiary bombs, which latter type he believes responsible for much the larger share of damage. "If an atom bomb were dropped in such a city as New York," he surmised, "the property damage would not be nearly so great as it was in Hiroshima and Nagasaki. But the loss of life would be much greater because of the concentration of people and their vulnerability to its terrific air blast." — ARTHUR J. LARIVIÈRE '35, *Secretary*, 7 Woodbine Street, Worcester 3, Mass.

CLASS NOTES

1888

After a long illness, Howland Shaw Chandler, of 1427 Great Plain Avenue, Needham, husband of the late Mabel A. (English) Chandler, passed away on March 11, in his 79th year. Mr. Chandler was for many years one of the best-known architects in Boston, with offices on Beacon Street, and in later years had been chief draftsman in the office of the town engineer. Among his associates at the town hall, by whom he was affectionately known as "Pop," as well as throughout the town, Mr. Chandler was held in high regard and esteem, with characteristics of the finest quality.

He was born in Boston, on July 2, 1867, and came to Needham in 1906, then purchasing his home on Great Plain Avenue. In 1941, Mr. and Mrs. Chandler celebrated their 50th wedding anniversary. Mr. Chandler was a graduate of Brighton high school and Technology. He designed many Needham residences, the Needham Golf Club, Needham Pumping Station, and the Congregational Church, as well as private houses in Manchester, Wellesley, Newton, Cohasset, and Duxbury, Mass., Holderness and Atkinson, N. H. He was an honorary member of the Needham Golf Club, and a member of the American Institute of Architects and the Boston Society of Architects. During World War I, Mr. Chandler served in the camouflage division of the Navy and was located in New York.

Outstanding amongst his professional work were hotels in Kennebunk, Maine, and Laramie, Wyo.; office buildings in Boston, such as the Delta Building in Post Office Square and the Congress Street Trust Building; an eight-story dormitory for the Boston Young Men's Christian Association; hospital plants at Lawrence, Salem, and Haverhill, Mass., and Youngstown, Ohio; the library at Kingston Plains, N. H., and at Alabama City; one \$50,000 house in Newton, an \$80,000 one in Lexington, and two private homes on Commonwealth Avenue in Boston. He assisted on plans for the Needham hospital and directed alterations in the Methodist, Unitarian, and Christian Science churches there, and in many existing old houses in Greater Boston.

For a large estate in Victoria, British Columbia, he planned dairy-farm cow barns, silos, garages, dog kennels, and even a piggery for some high-class animals, all topped off by a gate lodge and half a mile of high iron fence with tall gate posts and heavy gates in true English style to suit the English owner.

His son-in-law, Dr. Harry W. Kimball, pastor emeritus of the Congregational Church, who conducted the funeral services, writes: "Mr. Chandler was one of the finest men I ever knew, much beloved by all who knew him." — BERTRAND R. T. COLLINS, *Secretary*, Chebeague Island, Maine. SANFORD E. THOMPSON, *Assistant Secretary*, The Thompson and Lichtner Company, Inc., Park Square Building, Boston 15, Mass.

1890

The Alumni Banquet, on the occasion of the graduation of the Class of 2-46 on February 23d, was attended by Goodwin, Ropes, Sherman, and Packard. Dr. Compton outlined contemplated additions to M.I.T., including a three- to four-million-dollar library building, aggregating around \$9,000,000.

William P. Flint, writing from St. Petersburg, Fla., in February, says: "I have recently had the pleasure of meeting Franklin Knight and his good wife here. They seem quite comfortably located for the season at 843-26th Avenue North in this over-crowded town. I am writing that you may know I am still on deck. We still live in Coudersport, Pa., where I raise a few vegetables in the summer, but we much prefer the weather here in the winter."

Whitney, talking recently on the General Electric Science Forum program from Schenectady over WGY, said: "When human beings finally discover ways to world peace, to creative happiness, to a common religion of human welfare, and are intelligent enough to continue appreciating the infinite creation, then our uphill trail will not have been too long. That's faith calling for works, and I like it. — Whether we like it or not, the fields for research which are now opening up for us in the nucleus of atoms will enormously stimulate study of fundamentals (of things and of electricity) and will accelerate scientific progress to a new high. What ultimate results will be, no one can foretell, but I have full faith that it will be all for the pleasure and good of mankind." It is too bad Whitney's philosophy cannot be pounded into the minds of many more people.

Frank W. Atwood died in Pasadena, Calif., on March 5. One of the most dependable for attendance at our class reunions and alumni dinners, he will be much missed. During his active life, he was for many years associated with the dyestuffs and chemicals business, as a member of the firm of Whittemore-Wright Company, wherein he was able to broaden the field to cover many varied lines. The sailing in his earlier years gave place to golf in later life, when he was a member of the Brae Burn Country Club. Retired for 20 years, he was a life member of the Boston commandery of the Knights Templar, and past president of the Dry Salters Club of New England. Services in Boston on March 21 were attended by Burley, Goodwin, Sherman, and Packard. The sympathy of the Class is ex-

tended to his wife, Grace G. Atwood, whom we had the pleasure of meeting at our 50th anniversary, and to his daughter, Irene Atwood. — GEORGE A. PACKARD, *Secretary*, 50 Congress Street, Boston 9, Mass. HARRY M. GOODWIN, *Assistant Secretary*, Room 3-233, M.I.T., Cambridge 39, Mass.

1894

The Secretary has been "off the reservation" again, and these notes will therefore deal largely with his travels and meetings with a few classmates and many other Tech men, all of whom are doing things of importance. Leaving Boston on February 16, he attended the annual meeting of the Refrigeration Research Foundation, Inc., of which he is chairman of the board of directors and a member of the scientific advisory council. This organization is made up of, and supported by, the leading refrigeration warehouse companies in the United States and sponsors significant research projects in a number of the leading institutions of the country. Two of these research projects are now being carried on at M.I.T. in the departments of Food Technology and Mechanical Engineering. Other M.I.T. men on the scientific council are David L. Fiske '20, and B. E. Proctor '23. After the meetings of the foundation and the associated organizations, the Secretary went to Berkeley, Calif., to work out with the research director some plans for regional conferences designed to broaden the basic knowledge of those directly in charge of plant operations in this important and rapidly growing industry.

During the six days spent in Berkeley, one of the outstanding events was a Sunday night supper and evening spent with Austin Sperry and his charming wife, during which we recalled and recounted the happy reunions of our 45th anniversary. A telephone call to Jack Nowell resulted two days later in a class luncheon for the three of us at the San Mateo Country Club as Jack's guests, followed by a visit to his charming and beautifully located home. It was indeed an enjoyable reunion, and we wished others of the Class might have been there. While in Berkeley, the Secretary was entertained at dinner by Professor and Mrs. Turner (until 1944, Professor Turner was his colleague in the Biology Department at M.I.T.), also by Charles G. Hyde '96, now professor emeritus at the University of California, and by Hugh T. Griswold '29, one of the Secretary's numerous "boys" in Food Technology. He also enjoyed meeting Dr. Walter H. Brown, who took his certificate in public health at M.I.T. in 1915, and since his retirement from the direction of public health work at Stanford, is now acting head of the public health department at the University of California.

Leaving Berkeley by motor on an enjoyable drive of more than 400 miles via the San Joaquin Valley and over the mountains, the Secretary reached Los Angeles and spent the next five days in this extraordinary city and its environs. A little time was devoted to meetings on frozen foods, but more to renewing long-standing friendships and calling on relatives. Two nights were spent most pleasantly as the guest of Colonel Vestal, formerly head of the Military Science Department at the Institute. On the evening before departure for home,

the Secretary dined with a group hurriedly got together by C. H. Toll, Jr., '23 and including D. M. Hughes '15, H. R. Crowell '15, F. G. Harmon '23, and J. B. Pitkin '37. He is most appreciative of this courtesy to an "old grad," and greatly enjoyed the company of these men, all of whom are doing things of real importance.

The recent death of Ray Price was the one thing which detracted from the perfection of this visit to California, as a repetition of last year's experience had been anticipated when the trip was planned. But this was not to be. A letter to Mrs. Price was not answered, leading to the supposition that she had found it desirable to return at once to France to take care of matters there. On the way back from California, the Secretary attended the annual convention of the Institute of Food Technologists at Buffalo, where he met many old students but no classmates.

Can anyone tell us what a "luau" is? Judging by the report below, taken from the Honolulu *Advertiser*, it must be "some party." This one was held on March 2 at Puunene on Maui in honor of our classmate, Harry A. Baldwin, and Mrs. Baldwin. "A thousand people have been invited to the luau scheduled [to take place] at Trade Winds, Spreckelsville beach, in honor of Mr. and Mrs. Harry A. Baldwin. Mr. Baldwin recently retired as manager of the Maui Agricultural Co., the position he has held since 1904. Arthur Woolaway, chairman, will also be master of ceremonies. Other committees are: luau, Wallace Doty, Sam Sniffen and Hiene English; entertainment, Tom Dye; decorations, Mrs. Charles W. Burnette, Jr.; greens, East Maui Irrigation Co. Malcolm Clower, principal of Maui high school, has selected girls from the school to serve. James Kakakura is secretary for the luau; Ray Gill, personnel director of Maui Agricultural Co., is chairman of the general assistance committee, and Andrew Moody is in charge of food. Invited guests include all employees of the Maui Agricultural Co. and the East Maui Irrigation Co.; all members of the Baldwin family, officers and directors and all pensioners of both the agricultural and irrigation companies; and all employees of the Alexander and Baldwin Co. in Honolulu. Flying to Maui from Honolulu today to attend the luau were Richard Bell, assistant manager, and James Morgan, treasurer of Alexander and Baldwin, and Chauncey B. Wightman, executive secretary of Hawaiian Sugar Planters' association. John P. Foster, superintendent of the mill since 1906, is scheduled to introduce a number of the guests. Free transportation for all guests is being furnished for the thousand guests by the Kahului Railroad company."

Another Alumni Day is in the offing. A letter from Billy King says he will be on hand on June 8, and it is possible that we can get the '94 group together for a sort of mid-term reunion on this event. Keep it in mind. — SAMUEL C. PRESCOTT, *Secretary*, Room 3-233, M.I.T., Cambridge 39, Mass.

1895

There is much to think about but less to tell of our Class in this issue of The Review. Notice has been received that Eugene H. Clapp of 213 Congress Street, Boston, Mass., passed away on March 18. Your Secretary hopes to have the necrology

records of Willie Winkley and Gene Clapp in the next issue.

Our little wandering friend, Eddie Alden, braved travel and hotel conditions and with Mrs. Alden motored to the sunny South. They started last December and spent Christmas with relatives in New York State. Cautiously edging their way South, they finally landed in Jacksonville, Fla., and the last word has been received from them from Louisiana. With all the inconveniences experienced, including the impossibility of maintaining schedules, they succeeded in getting their "swimming exercises" but report that the water was very cold. This first bulletin includes the facts that Florida is crowded to the limit and that prices for accommodations are outrageous, while services rendered are very poor. When their trek ends, we may have another story. — LUTHER K. YODER, *Secretary*, 69 Pleasant Street, Ayer, Mass.

1896

At the risk of repetition the Secretaries again remind classmates of the observance of our 50th anniversary at East Bay Lodge, in Osterville, on June 6 and 7, to be followed by a trek to M.I.T. in Cambridge for the big celebration of Alumni Day there on Saturday, June 8. Also classmates are again urged to make a grand effort for substantial contribution to the Alumni Fund at M.I.T. in our 50th year, bearing in mind that the Fund year began on April 1.

One name which was inadvertently omitted in the record of classmates attending the luncheon of Dr. and Mrs. Compton at the Algonquin Club on February 25 was that of Charlie Gibson. Ada Daniels has recently moved from Newton and is now at 30 Evergreen Avenue, Hartford 5, Conn. From Lloyd Wayne comes the information that Joe Stickney has again been elected president of the Indianapolis Athletic Club. He has held this office so long that the Secretaries have lost track of the number of times he has been elected. Wayne also wrote that he was greatly disappointed in being unable to be in Cambridge in February, but his landlord where he had lived for years had died suddenly from a heart attack, and since Wayne seemed to know more about his affairs than any of his relatives, his presence was much needed in Indianapolis. However, he is counting definitely on being with us in June. Walter Leland is another man who is giving very serious thought to making a trip east from San Francisco to attend our June reunion.

Henry Sears, who went west a few years ago to Wichita, Kansas, to teach at the university had retired, but he writes that last September he was asked to return to teach college algebra, which he did, and things went well until January of this year, when the university was swamped with additional registrations of over 700, and Henry became involved in teaching three classes, total 154 students, five days a week. However, he felt that he was handling the situation very well, and since the school year ends on May 27, he is planning to be in Osterville on June 6. Myron Fuller has purchased a house in the residence section near the library at Fort Myers, Fla., and plans to make it his legal residence in the future, but his expectation is that he will come North to Easton, Mass., during the summers. Augustus J. Bowie has made a

change in his San Francisco location to 2170 Vallejo Street, San Francisco 23.

Word has been received through the State Department that our classmate, A. W. Grabau, for whom appeal was made in the last issue, passed away in Peiping on March 20. He had had a long and outstanding career in his special field of geology. For the past 25 years he had been a resident of China, serving as professor of geology at Peiping University and in various government capacities. He was a prolific writer and a man internationally recognized as an authority in his profession. — CHARLES E. LOCKE, *Secretary*, Room 8-109, M.I.T., Cambridge 39, Mass. JOHN A. ROCKWELL, *Assistant Secretary*, 24 Garden Street, Cambridge 38, Mass.

1899

According to the Boston *Herald*, William A. Kingman, V, died at his home in Framingham, Mass., on February 20. Bill left his wife, Grace, one daughter, two brothers, and four sisters. He became connected with the Dennison Manufacturing Company soon after he was graduated from Technology and remained with that concern until his death. Miles Sherrill hopes to get further information later.

The Washington, D.C., *Star* for January 25 carried a story of Bernard Herman's retirement as chief engineer of the Southern railway system on January 25. He was born in the District and attended the Washington schools. Bernard entered the service of that railway system one year after graduation as assistant engineer. He subsequently advanced to the position of chief bridge engineer and in 1920 became assistant to the vice-president. Herman's address is Woodley Park Towers, 2737 Devonshire Place, Northwest, Washington, D. C.

Arthur Foote of Grass Valley, Calif., about whom I have written before, had an article in the *Mining Journal* for October 30 on "Gold Production and Economics." The author believes gold mining could be advanced by a sound government policy (comment: what couldn't?) with the emphasis on the production of natural wealth and resources, instead of spending money to create jobs, since prosperity is brought about by the creation of wealth rather than by its distribution. (That sounds like Professor Dewey's precepts.)

Art Hamilton, Miles Sherrill, and your humble servant have formed themselves into a committee to develop plans for our 50th anniversary of graduation. Any suggestions? Henry Skinner and Miles Sherrill were the only two classmates who attended the Alumni Banquet on February 23. Don't forget that there is another Alumni Banquet and class meeting coming on June 8. Plan for it now. Arthur Brown of the Exchange Building, 53 State Street, Boston, is chairman of this dinner committee, and Skinner, 246 Stuart Street, Boston, and Sherrill, M.I.T., are members. Write to one of them now and say you'll be there. — BURT R. RICKARDS, *Secretary*, 381 State Street, Albany, N.Y. ARTHUR H. BROWN, *Assistant Secretary*, 53 State Street, Boston 9, Mass.

1902

The Class was well represented at the Alumni Dinner on February 23 by eight members: Doc Williams, Norm Borden,

Grant Taylor, Steve Gardner, Hunter, Bert Haskell, Ike Reynolds, and Philbrick. It had been a long time since Gardner and Borden had met with our Class, and all were glad to get in touch with them again.

Dan Patch writes as follows from Honolulu: "I have been on a mighty interesting assignment as my main line of endeavor with several sidelines of almost equal interest. You know how the boys who are supposed to know their soil have all been rooting for contour planting to conserve land values. Well, the pineapple growers fell in line, and the straight lines, which a few years ago were photographed and bragged about, have gone into contortions. It was getting to be considered a tough job to carry pineapples in a sack to the end of the rows running the short way across the plats, but with the contour planting the chore has become so arduous that some new method has been a "must" with the pineapple plantations. When the work was pig-a-back, it was convenient to put the fruit in wooden lugs, which held about 60 pounds each, and stack these lugs on a truck or flatcar for transport to the cannery. These lugs are hardly suitable, however, to handle the big gobs of fruit that come over a belt conveyor that is moved over the field ahead of a row of pickers. Each company is developing a mechanism to support and move such a belt conveyor which will reach halfway across the plat. A picker in each row follows this, picks the ripe fruit, knocks or cuts off the top, and places the fruit on the belt. To give any kind of continuous operation, there must be a big box to receive the fruit. Now "pines" cannot be piled more than about two feet deep without injury, but even at that depth the box has from one-half to three or four tons of fruit in it, depending on the size of the box. Having got all this fruit into the box, the problem is to get it out again on to a belt conveyor at the cannery without congestion and too much bruising. That's where I have been using up my gray matter, and it's been fun in spite of some lost sleep."

Dan also writes that he has heard from J. E. Steever of Chicago and hopes to get a few notes regarding his activities. — Cates has recently been elected president of the American Institute of Mining and Metallurgical Engineers. — Roger Greeley has lately been awarded a certificate of fellowship by the American Institute of Architects for his "achievement in architecture and public service." — BURTON G. PHILBRICK, *Secretary*, 246 Stuart Street, Boston 16, Mass.

1905

Bertrand L. Johnson, III, mineral economist, with the United States Bureau of Mines, Washington, D.C., has sent a bunch of pamphlets and treatises such as he has been writing for the past 20 years on phosphate, barite, mica, and so on, which as class property may be perused at class reunions and probably obtained from Bert at 1414 Highland Drive, Woodside Park, Silver Spring, Md. Since your Secretary took Mechanical Engineering and therefore is not supposed to know anything about minerals (Carl Graesser to the contrary), you will have to get details from B. L. J. Bert says: "I have been with the Bureau of Mines since 1925. My first wife, who at one

time was in Mr. Humphrey's office at Technology, died in 1924, and I married again in 1931, and have one son from that marriage, now in junior high school. I am not in 'Who's Who,' but you can find a little added information in 'American Men of Science,' 'Who's Who in Engineering,' and the recent 'Who's Who in the East,' published in Boston. I have a little hair left and a few (very few) teeth remaining. When I have my hat on and don't smile, I don't look my age. My weight is about 15 pounds above normal, with the excess partly in front, partly in back." Perhaps Bert means "portly."

Jim Barlow, I, city manager of Portland, Maine, for the past 18 years, has announced his intention to retire as of November 1, 1946. Jim has purchased a small farm of 20 or 30 acres on the shore of Sabbath Day Lake between Gray and Poland Springs, Maine, and will take up residence there by July of this year. Jim hopes that any of the gang travelling in his vicinity will look him up. Jack Flynn, II, sends an enigma from Buenos Aires, Argentina. Help the secretary interpret this: "I have high hopes of introducing La Señora (Susana Girard de Flynn) to you all next June. Hasta luego." My liberal interpretation is — congratulations, Jack (or rather Susanne), and two more for our 41st reunion.

That reunion, by the way, will be held at East Bay Lodge, Osterville, Mass., on June 21, 22, and 23. Last year the demand seemed to be for Cape Cod, and we were fortunate in obtaining this famous hostelry for the date we wanted. Notices have already gone out to our entire mailing list, but further details as to accommodations, transportation, and so forth, will be mailed later. After only a few days' returns from the mailing of our announcement are coming in in sufficient volume to insure the prediction that our "delayed 40th" may be the biggest ever.

Louis Robbe, who is getting to be our ace New York correspondent, reports that he and Fouhy, Landers and Lombard attended the Technology club dinner in January; also that there were other '05 men, to whom he didn't get near enough to identify (some crowd). That's even better than our representation at the Alumni Dinner at the Hotel Statler on February 23. I couldn't be there on account of a wedding in the family; it was the first '05 gathering I've missed, I think, in 40 years, but Sam Shapira reported that Pete Harvey, Harry Wentworth, and Bob McLean, together with Sam, the ten-dollar-sandwich man, attended.

Leonard H. Foley, II, is reported to have resigned his position with W. D. Cashin Company, South Boston, and gone back to his old love, Stone and Webster Engineering Corporation in Boston. My daughter, Marjorie, having received her honorable discharge after two and one-half years in the Navy Nurse Corps (with the rank of junior grade lieutenant) was married on February 9 to James V. Richardson of High Point, N.C., a chief pharmacist's mate. They will be located temporarily, at least, at San Diego, Calif. Now I have five daughters and one son. — FRED W. GOLDTHWAIT, *Secretary*, 274 Franklin Street, Boston 10, Mass. SIDNEY T. STRICKLAND, *Assistant Secretary*, 71 Newbury Street, Boston 16, Mass.

1906

Eleven members of the Class attended the reunion banquet held on Alumni Day on February 23, as follows: W. G. Abbott, Herbert Ball, Sherman Chase, George Guernsey, Tom Hinckley, George Hobson, Chester Hoefer, Harry H. Lewenberg, Ned Rowe, Malcolm Wight, and the Secretary. The Boston contingent was pleased to welcome a new addition to the group in the person of Chester A. Hoefer, VI, who is with Barclay and Dexter at 528 and resides at 186 Commonwealth Avenue.

Several members of the Class spoke about the 1946 reunion. They were told that a suitable location in which to hold it had not been found, and that is still the situation at this writing (March 21). In arranging for the reunion, the Secretary had in mind to tie it in with Alumni Day, which has been set for June 8. However, many of the resorts where the affair might be held are not open that early in the season. It is hoped that by the time you read these notes plans will have been completed and you will have been notified of the time and place of the celebration.

A new honor has come to George Hobson, who has been awarded the Legion of Merit. Classmates will recall that George entered the Army in time for World War I and remained in the Quartermaster Corps during most of World War II. Most of his work in this last war was performed at Camp Lee, his old stamping ground in World War I. His citation reads as follows: "As officer in charge of construction, Colonel Hobson supervised the building in record time of facilities for more than 50,000 students during World War II; the success of the construction program was due to his engineering skill, his superior administrative ability, and his consecrated devotion to duty. As secretary of the Quartermaster School during the period of greatest expansion, he established statistical and reportorial procedures that have been continued at the School. As commanding officer of troops, he placed new emphasis upon military training. As assistant commandant, he gave brilliant guidance to the instructional program during a transitional period, raised the required qualifications for officer candidates, and outlined programs of instruction for newly established officer classes. As executive officer, he gave continuity to the program at the time when officers and enlisted men were being trained for the most difficult period of the war. That the Quartermaster School fulfilled its mission is due in large measure to the superior leadership Colonel Hobson evinced in positions of great responsibility." The presentation was made by Lieutenant General Griswold at Headquarters, First Service Command, Boston. Present at the ceremony in addition to the principals were Miss Sally Hobson, the Colonel's sister; John Hobson, his son; Brigadier General Halsey, Chief of Staff, First Service Command; Colonel Farnsworth, commanding the Quartermaster Depot in Boston; Aleck W. Yereance '11, who served with the then Captain Hobson in the 305th Engineers, and personnel of the First Service Command Headquarters. George is now residing at 72 Cypress Street, Brookline, and is a regular member of the M.I.T. '06 group.

On March 5, the Secretary received the following interesting letter from Harold Coes: "I have been out of the country for four months. Our firm, Ford, Bacon and Davis, was retained by the planning and development department of the Government of India to aid them in some of the industrial problems, and I was designated to function as consulting engineer to the Government of India. I have just returned home recently; I flew over to London, then to Karachi and back. I had a very interesting trip. I was a guest of the Steel Corporation of Bengal at Asansol and was put up at the director's bungalow. One evening the works manager brought in an Indian gentleman who proved to be our classmate, Gupta. He is functioning practically as city manager of the village where the steel plant is located in Burnpur. We had a nice visit and later went over to his home and met Mrs. Gupta, who is an American girl. Mr. and Mrs. Gupta say that they are coming to the United States after a while for a visit. I told him we hoped that we should see them when they were here."

Thanks are due Charlie Locke '96 for forwarding some clippings concerning our classmate, F. W. Libbey, III. Libbey is the director of the Oregon state department of geology and mineral industries. Through Libbey's work, ore has been located in Oregon which will be used as a source of aluminum. The development seems so promising that the Aluminum Company of America is interested. By the importation of limestone from Alaska, a large scale production of aluminum from the Oregon ore is anticipated. Thus is Libbey responsible for promoting this industrial development in his state.

On February 25, Henry Ginsburg sent a post card from Miami Beach, Fla., saying that this was his first visit there since before the war. Incidentally, he inquired as to the plans for the 40th reunion. Let this be one more reminder to you all to make plans to attend this year's reunion.—JAMES W. KIDDER, *Secretary*, Room 815, 50 Oliver Street, Boston 10, Mass. EDWARD B. ROWE, *Assistant Secretary*, 11 Cushing Road, Wellesley Hills 82, Mass.

1907

Not much news this time, fellows. Eight '07 men sat at the class table at the Alumni Association dinner in Boston on February 23—George Crane, Ralph Hudson, Ed Lee, Alexander Macomber, Ed Moreland, Peabo, Don Robbins, and Harold Wonson. It was not lack of interest but lack of transportation facilities that kept your Secretary away from this gathering.—Under date of February 12, I received a letter from Max Greenburg, who is manager of the British Thomson-Houston Company, Ltd., branch in Tel Aviv, Palestine. He wrote: "The present cost of living here, according to the Government Index, is 260, compared to 100 before the war. Actually, food and clothing are about five times pre-war prices. I was in the States last summer and spent two week ends with my people, who live in or around Boston. I was very busy keeping up with the itinerary of the General Electric Company, of which the British Thomson is an associate company. Mrs. Greenburg has been in the States for about six months." Max enclosed his check for the Alumni Fund,

to which he has been a contributor each year since the fund program began.

Our class contributions to this Fund have been very creditable for 1945-1946. As of February 28, the official report gave 117 givers for a total of \$3,287, but at the time of writing these notes (March 24), I know of two more contributions for a total of \$120, so that now we have 119 givers against a quota of 115, or 104 per cent, and gifts of \$3,407 with a quota of \$2,650, or 129 per cent. I am hoping for at least one more gift before March 31, the end of the Fund fiscal year. Even as matters now stand, this is the best year for '07 for any of the six years of this plan. Our contributions are \$603 ahead of those for last year and show an increase of 90 per cent over those of the first year. My personal thanks to you who read this and have made this showing possible. I hope we shall exceed our past performances for the 1946-1947 Fund.

1947 means 40-year reunion for '07. I have made tentative reservations for us at Oyster Harbors, Osterville, Mass., from Friday afternoon, June 20, to Sunday afternoon, June 22, 1947. These dates are somewhat later than those talked of at our Boston class dinner on last February 15, but I find that in 1947 Oyster Harbors will probably not be open for business before June 15. Put these dates down in your engagement books. I have told the management at Osterville that we shall no doubt have at least 50 men present. This should be a minimum. It would seem as though 119 contributors to the Fund might mean 119 men interested to attend our 40th reunion! —BRYANT NICHOLS, *Secretary*, 23 Leland Road, Whitinsville, Mass. HAROLD S. WONSON, *Assistant Secretary*, Commonwealth Shoe and Leather Company, Whitman, Mass.

1908

Our third get-together meeting and dinner of the 1945-1946 season was held at the University Club in Boston on March 19 at 6:00 P.M. The "clan" began assembling at the Grill Room soon after 5:00 P.M. and by 6:30 P.M., when we sat down for dinner, 14 classmates had arrived, namely: Bill McAuliffe, George Freethy, Art Appleton, Jeff Beede, Toot Ellis, Linc Mayo, Ray Drake, Bill Medlicott, George Belcher, Henry Sewell, Harold Gurney, Myron Davis, Linc Soule, and Nick Carter. After an excellent dinner, we moved to our private room to see some moving pictures. In the absence of Joe Wattles, who was busy with a Rotary Club meeting at Canton, George Freethy officiated at the projector and showed several very interesting news and travel films. "A good time was had by all." The next dinner and meeting will be held in the Silver Room at Walker Memorial, M.I.T., on Tuesday, May 14, at 6:00 P.M. The usual reply postal cards will be mailed early in May.

Cookie, our Class Agent for the Alumni Fund, tells me that the Class has passed its quota in number of subscribers but hasn't reached the quota for amount subscribed. Linc Mayo, our collector of funds for the Class, with our 40th reunion in mind, tells me that dues are coming in rather slowly; as of March 20, 37 classmates had contributed some \$260. If you haven't contributed, please do so.

We are very sorry to report the death on March 5 of Langdon Coffin. Since undergraduate days, Lang had always been a great booster for '08 and a regular attendant at all class and Technology functions. It is hard to realize that he is gone. We shall certainly miss him at our coming 40th reunion. The following article appeared in the *Boston Herald* of March 6: "Frank Langdon Coffin, 60, of 150 Church Street, Newton, for 38 years an engineer of the Samson Cordage Company of Boston, died [on March 5] at his home. He was graduated from . . . Technology in 1908. He was a member of the City, Appalachian, and University clubs, the Unitarian Church of Newton, and the Natural History Museum of New York. His sole survivor is a sister-in-law, Mrs. Francis Coffin, with whom he made his home. . . ."

The following letter, received by Linc Mayo from John T. Tobin, is of interest: "I was very glad to receive your circular letter of the fourth [of February] and enclose you a money order for \$10 to credit against my arrears in class dues. I will try to do better in this from now on. Nobody knows, maybe I'll have the good luck to make the 40th reunion up in dear old Boston. I should certainly like to. For the record, just to catch the boys up with me, through connivance with Karl Fernstrom '10, immediately after graduation I disappeared below the Mason and Dixon line and went to work for the Virginian Railway, a heavy coal-hauling road, of which his father was chief engineer. After six years of fine construction experience, I came out of the woods, spent some years as a structural engineer with the government, which managed to keep me in Maine and New Hampshire in the wintertime and down South in the summer, and went with the Bethlehem Steel Company as a construction engineer in Maryland, again getting some great experience but still homesick every time I saw a Virginian Railway Box Car. So when, through contacts made while working down here, this firm (the Gulf Smokeless Coal Company) offered me a chance to come back down into this country, I jumped at it and in a few months shall have completed 25 years with them here in the mountains of West Virginia.

"It may seem strange to the boys to know that I am a mining engineer, but I can prove it to the skeptics because I have a license from the State of West Virginia as such, so let them scoff at that. The gist of the matter is that coal mining is practically civil engineering transferred underground. We have miles of railroad underground, where everything Professor Allen taught me has been valuable; on the preparation plants and tipplers, you are a structural engineer, you delve in chemistry on your preparation and water supplies, you become a mechanical engineer on your machinery installations, and what you should know about electricity is a caution—with substations underground, kilowatt hours and feeders, and who's responsible for the dropping power factor. That the coming successful mining man will have to know his electricity is a sure prediction. Our new mechanical mine in the 36-inch Pocahontas No. 4 Seam is a model of its kind. The coal is loaded onto face chain conveyors by face gangs with shovels or by loading machines, the face conveyors

dump onto gathering conveyors, which deliver to the long gathering belts which load the mine cars to go to the tipple. Everything is electrical and so noisy, the engineer crew work by signals with their electric cap lamps. The mine is just a big city underground. There's a fascination to it that grows on you.

"My home is in Princeton, W.Va., a nice little town. I board here in Tams and have a room over the big company store, where they'll sell you everything but an automobile. I've had a crack at managing the town baseball team, ran the town picture show for four years, and even umpired in a semipro baseball league a couple of years, am bald, wear glasses, have no teeth, eat like a horse, and smoke like a chimney, fooled Miss Agnes Ainsworth into marrying me, and my daughter, Mary Theresa, was graduated from Duke and is now manager of the wallpaper department in Macy's, New York City. . . . I will close now with very best regards to all my old friends and especially wishing you and Les Carter every success with the 40th reunion."

The marriage of Virginia Freethy, daughter of Mr. and Mrs. George Freethy of Watertown, Mass., took place in February. Her husband is Captain Francis Sprong, U. S. A., of Greenwich, Conn.—The engagement of Nancy Jane Bell, of Old Lyme, Conn., to Richard Leston Carter, son of Nick and Helen Carter, was announced in February. Miss Bell attended the Holladay School in Annapolis and Oldfields School at Glencoe, Md. Lieutenant Carter is in the Army Transportation Corps and will resume his studies at Technology when he is discharged from the service.

The following letter has been received by Linc Mayo from Harry Rapelye: "Here-with a small expression of sympathy for the Treasurer. The uneventful character of my life disqualifies me as a contributor to the class news. Sometimes I think it remarkable, if not noteworthy, that most of the past four and a half years have been spent in Washington, and I'm still alive, and at liberty, too. There is a large institution for mental cases here, but so far they haven't put me away. I hope you and yours are well and prosperous. As your circular indicates, we are getting into the bracket of heavy casualties. I am hoping sincerely to see you not later than the 1948 reunion." Letters of greeting have been received from the following classmates, along with their contributions: C. E. Goldthwait, Monroe Ames, Charlie Steese, V. Max Frey, Leo Loeb, and Everett Newhall.

G. William Bailey, Jr., reports the death of his father, of which we are sorry to hear. His interesting letter, quoted in full, reads: "We have your letter of March 11, to my father, George William Bailey '08, in regard to a contribution to the Alumni Fund and regret to inform you that my father passed away on March 8, of pneumonia. He was 58 years old. During the war he was project manager for the Wigton-Abbott Corporation of Plainfield, N.J., on the construction of the naval supply depot at Bayonne, N.J., and the naval aircraft delivery unit at Trenton, N.J. The former job was one of the first construction jobs in the United States to receive the Army-Navy 'E' award, and the first in

the metropolitan district. He had returned from Rio de Janeiro, Brazil, last September, after spending 20 months there as consultant to the Servix Engelharia, Ltd., a prominent Brazilian engineering and construction firm.

"My father has been active in the construction industry since his graduation from Technology, spending most of his time in the New York, New Jersey, and New England areas. From 1927 to 1933, he was construction manager for the City Housing Corporation of New York on the development of Sunnyside Gardens, Long Island City, N.Y., of Munsey Park, Manhasset, N.Y., of Radburn, 'The Town for the Motor Age,' in Fairlawn, N.J., and of the Phipps Houses, Long Island City, N.Y. During World War I he was general superintendent of construction of the Levering Garrigues Company, general contractors, in New York City. Surviving are my mother, Edith Mary Bailey, my brother, Sherburn Byron, and myself, all of Millburn, N.J."

Herb Gerrish's daughter, Nancy Gerrish, was married recently to John Archibald MacFayden, Jr., in the Melrose Highlands, Mass., Congregational Church.—An interesting article by Gregory M. Dexter entitled "Less Talk, More Action, Needed on Professional Standing" appeared in the *Mechanical Engineering* for March.—We have the following changes of address to report: Henry W. Dun, Belden Hill Road, Wilton, Conn.; Victor M. Frey, 37 West Market Street, York, Pa.; Lynn A. Loomis, 255 Culver Road, Rochester 7, N.Y.—H. LESTON CARTER, *Secretary*, 60 Batterymarch, Boston 10, Mass.

1909

Probably you folks have noted in recent numbers of *The Review* a list of area placement chairmen, each one listed having information about M.I.T. graduates who wish to locate in his particular area. Our Class is more than well represented by Homer Bender, I, in Spokane, Wash.; Leland Clapper, I, in Duluth, Minn.; George Gadsby, V, in Salt Lake City; Harry Havens, XI, in Kansas City; Harold Lang, VII, in Pittsburgh; and Lew Nisbet, I, in Portland, Maine. We were more than pleased to hear, as follows, from one of the above, Harold Lang, a professor at Carnegie Tech: "It was good to receive your letter of March 13, and I will reply to your request for some information about myself and family. I am afraid that I have been negligent for a long time about sending in news for the class notes. But I will try to make up for past omissions. I am still professor of biology and public health at Carnegie Tech, where I have been located since 1917. Since 1929, I have been head of the department of science in the Margaret Morrison College, which is the women's college of Carnegie Tech. About half of my time is spent in teaching and the rest devoted to administrative matters and committee work; the latter you will appreciate, being a faculty member yourself. Our local M.I.T. alumni group organized a placement committee to help former M.I.T. graduates, returning from the services, who wanted to locate here in the Pittsburgh area. On the committee are representatives from the different industries. My job, as chairman, is to try to get the

returning veteran in touch with the man in the particular industry in which he would like to find an opening. Thus far, we have not had many requests but have helped some few men. I hope that we can do more work in the near future.

"You asked about my family. We have two sons. Our older boy, John Stanley (Harvard '35) has been in the service as a noncom in the finance division of the Army. He is now employed as a civilian by the Office of Military Government in Frankfurt, Germany. He was married to Barbara Grieves, of Weymouth, Mass., in 1940, and they have one son, Peter, a year old, whom his Dad has yet to see. Peter is our only grandchild. Our younger boy, Harold Bickford (Bowdoin, '36, and Harvard Medical School, '40), was a captain and flight surgeon with the Ninth Air Force in Europe. He is now located in Cleveland, Ohio, as resident physician in the Babies and Children's Hospital, where he is completing his specialized training in pediatrics. He married Nancy Blair, of Erie, Pa., in 1941. Mrs. Lang spends most of her spare time in connection with the Public Health Nursing Association, being a director of our local organization and lay chairman for the state organization. That work and being an advisor to the local chapter of Delta Delta Delta, the women's fraternity here at C.I.T., keeps her busy. About the only '09 man whom I see at all frequently is Tom Spooner. He and I manage to get around to the alumni dinners quite regularly. I have missed all the class reunions for a good many years as they have come in June, around our commencement time, and it has been impossible for me to get away. Maybe I can make the 40th. Mrs. Lang and I spend our summers, when we can get there, at our place in Truro, Mass., where we have had a summer home for the past 20 years. We hope to be able to go on this summer. If I get to Boston, I will look you up. You and Paul are doing a fine job with the class notes, which I always read with a great deal of interest. Thanks for your letter, and good wishes. Remember me to any of the '09 fellows when you see them." Your Secretaries are looking for similar communications from our other area chairmen.

Tom Desmond, I, among multitudinous activities directed toward improving this good country of ours, has for some time been directing his energies towards the elimination of the billboard nuisances which so badly deface many of our otherwise picturesque highways. Probably none of us ever realized all the backstage work and wirepulling that is done by the vested interests in order to thwart the will of the people in their attempts to eliminate the nuisance. If you have any interest in knowing what a legislator is up against when he attempts a crusade for the public good which steps on the toes of the boys who are getting the dough, we recommend that all of you read Tom's article, "The Coming Billboard Battle," in the April number of the *Reader's Digest*. It's well worth reading.

From Paul: The other day I had lunch with Hardy Cook. I see Hardy seldom . . . too seldom. And again for the steenth time, I took a good look at him. I vow he and Reg Jones have something on me as well as most of the rest of us. Neither of them looks a day older than he did at our

commencement or our 10th reunion or our 25th — not to mention our 35th! I look at them both in envy and admiration: every blessed hair in place and nary a gray one! There may be others of us as fortunate, but these two must have an eternal well of supervitamins that never fails. And I murmur "Hail, Reg, and hail, Hardy!" Hardy mentioned his three children, all of whom have been in the service, and what he said was so full of interest that I made him promise to write me more details.

Like the good boy Hardy is, he not only did as I asked but told a tale to be proud of and certainly to be shared with the rest of the Class. He says: "You asked me what my children were doing in the service: so here goes. The older boy, Walter Hastings, put in most of his time in Detroit. For the past year he has been in charge of automotive equipment for the Detroit Ordnance District. This includes not only the Army's needs but also the requirements of the Navy, the Marines, and the alphabetical war organizations. He is a major and will be separated on April 15 of this year. Before the Detroit assignment, he was resident engineer for the Ordnance Department at General Motors in Pontiac; and before that, he was assistant chairman of the committee that was speeding up production of the Ducks; and before the Duck assignment, he was chairman of the light tank integrating committee with industry. On last September first, he took unto himself a wife, the former Norma Schoofe of Rochester, Mich. His mother and I flew out to the wedding, and we had quite a time. Margery, my favorite daughter, served her country as a WAVB for three years and five months. [Who said there was not a father-and-daughter complex in the Cook family? P.M.W.] She was a third-class pharmacist's mate in the Hospital Corps and was stationed at Brooklyn, at the Chelsea, Mass., Naval Hospital, and at the Patuxent River Naval Air Station in Maryland. From the latter place she was chosen for a six months' intensive course in occupational therapy at Hunter College in the Bronx. From there she was sent to the Naval Hospital at Dublin, Ga., where she stayed until her discharge in January. Margery is taking a little vacation with us and waiting to resume her teaching in the fall. My younger son, Hardy Merrill, Jr., was also, like his brother, in Ordnance. His last job was that of design engineer in the ballistics research supersonic wind tunnel at the Aberdeen Proving Ground in Maryland. His rating was technician, third grade, and he was discharged about a month ago. Immediately after his discharge, he also got himself married. His bride is the former Elizabeth Frierson of Union, S.C. So his Mother and I took another trip that we thoroughly enjoyed. Merrill and his bride took our car to Florida for their honeymoon, and we returned from the South by train. On March 21 he received the Army commendation ribbon and citation." — PAUL M. WISWALL, Secretary, 90 Hillside Avenue, Glen Ridge, N.J. CHESTER L. DAWES, Review Secretary, Pierce Hall, Harvard University, Cambridge 38, Mass. Assistant Secretaries: MAURICE R. SCHARRF, 3860 Rodman Street, Northwest, Washington 16, D.C.; GEORGE E. WALLIS, 1606 Hinman Avenue, Evanston, Ill.

1910

I have the sad duty of reporting the passing of two of our classmates, A. W. Andrews and Earl J. W. Ragsdale. The only information I have in regard to A. W. Andrews is a short notice from his secretary that he died suddenly on December 27. The following was published in the *Railway Age*: "Colonel E. J. Ragsdale, chief engineer of the railway division of the Edward G. Budd Manufacturing Company, died of a heart attack on February 24. He was 61 years of age. Colonel Ragsdale was born in San Francisco, Calif., and spent his boyhood in China, where his father was in the United States diplomatic service; in Flushing, Long Island, New York, and in Berlin, where he studied for a degree in naval architecture. He enlisted in the British Army at 15 years of age while in Tientsin, China, to help quell the Boxer uprising. He was wounded and smuggled to Japan, where he recovered after three months. He went to Germany in 1903 and mixed study with travel through Russia and Switzerland. After a course in shipbuilding at . . . Technology, he was commissioned in the United States Army in 1910. Shortly after World War I, he resigned his commission and joined the Budd Company as a research engineer. In that capacity and later as chief engineer of the railway division, he promoted the use of fourwheel brakes for automobiles, invented the Shotweld system, which made possible Budd's varied use of stainless steel, and developed many of the design and comfort features of the streamlined stainless steel railroad passenger cars."

Karl Fernstrom is with the Cramp Shipbuilding Company in Philadelphia and on his card sent his best regards to all classmates. John Ahlers is a commander in the Navy stationed at Washington, D.C., and expects to be separated from the service soon. Phil Burnham is located in Wilmington, Del., and sent his regards to the Class. Frank Bell got out of the service on October 30 and is back with his contracting concern. Frank says that Hal Manson visited him on his way to South America. Hal mentions that he had a fine time with Frank in Dallas in January. E. M. Potter writes that he is so busy that he will not be able to help out with the June reunion but hopes to attend. Larry Hemmenway has left Holtzer-Cabot and is now with the American Lime Products Company. Larry writes that he has been in the hospital but is now fixed up for another 50 years.

The reaction of members of the Class in the recent request for class dues was most interesting. Under the item of remarks, numerous complaints of the lack of class notes in The Review were entered. But, out of the 200 returns, less than 20 classmates filled in this item, and only 10 gave any information that would have been of interest. By the time this appears in The Review, each of you will have received full information about the June reunion, and if you had any doubt about attending, let this notice make up your decision to be there. — HERBERT S. CLEVERDON, Secretary, 120 Tremont Street, Boston 8, Mass.

1911

Commander of the United States Army Strategic Air Forces is the title given our

George Kenney, I, shortly before mid-March, and his headquarters will be at Andrews Field, Maryland, near Washington. Two days previously George had made a very short trip to Boston to discuss aviation in Massachusetts with members of the legislative recess commission on aviation, headed by House Speaker Willis. George said: "It's about time Boston got an airport. Commercial aviation is developing at a rapid pace, and transport planes must have proper terminal facilities to meet this rapid advance in the air world. Planes today are hauling about everything but coal. . . . There are better airports in the jungles of New Guinea than we have in Boston, and Boston will surely be bypassed unless something is done to offer modern airport facilities. I've landed 97 C-47's in an hour on overseas airports, but you couldn't do that in Bedford or Boston in a day." In an earlier press interview George said that General MacArthur, not Hirohito, is the number one man in the Japanese mind. The Japs weren't particularly surprised this winter when the Emperor of Nippon announced that he was no longer the "Son of Heaven," and MacArthur has been their god ever since. Definite assurance was also given me by George that he and his wife are planning to be with us at East Bay Lodge at Osterville on Cape Cod, for our 35th reunion on the Memorial Day week end.

Speaking of the reunion, two of our classmates in foreign climes are planning trips to the States to make possible reunion attendance: Frank Osborn, III, from Potrillo, Chile, and Ove Collett, III, from Oslo, Norway. Remember the miracle story I told you about Julius Waldstein's regaining his sight after being blind? Well, Julius is now planning to attend from Charleston, W. Va. Why don't you make up your mind now to attend, if you haven't already registered — you have only to "w. t. D." and phht! you're in for the treat of your life.

Nat Seeley, II, has made a convert — he has persuaded Lewis Southwick, VI, who entered with 1910 and was graduated with us, to share his affiliation with both 1911 and 1910. Lew wrote: "It was mighty good of you to want me in the Class of 1911, and I have always admired your excellent reporting of class notes. I feel flattered and thank you for the invitation. Seems to me I'll just consider myself beholden to both 1910 and 1911 — hope this is all right. I don't know yet whether I can make the reunion, but here is a check for class dues, and I'll do my best. Yes, I still have an interest in the Electro-Chemical Engraving Company in New York City but not an active one — my real status is that of an 'underprivileged' country gentleman here at Shelter Island Heights, N.Y.' Welcome, classmate!

Paul Kellogg reports that the chances are very good that he and his wife will be with us from Montreal. "Things are going along about as usual," he says. "My son, Len, who was in the United States Navy, is once more back in civilian life and is joining Stevenson and Kellogg, Ltd., to work out of our Vancouver office. His wife had a daughter about six months ago, an event which makes me a grandfather four times — not so very strange, seeing that we are celebrating our 35th reunion."

Kingsley Dennett, II, writes from Waialae, Oahu, T.H.: "Since returning from

plantation work, I have been in government work for the last three years, first handling shipping priorities for civilian imports to the territory and later as traffic manager for the Office of War Information, United States Intelligence Service, and Office of Intelligence Co-ordination, successively, here in Honolulu. Now I am hoping for an opportunity to go to Japan. Thirty-one years at handling labor of Oriental extraction on plantations here and three years of shipping work for the government should make me of some value there, I would think. I may come East this spring to see my youngest son graduated from West Point."

The Class may well be proud of its wonderful advance in the six years of Alumni Fund activity. When the fund started in 1940-1941, there was a \$25 spread between the donations of 1909, 1911, 1912, and 1913-'12 leading with \$1,265, to our \$1,263, '13's \$1,250, and '09's \$1,242. Over the next five campaigns ours has shown an increase of 320 per cent, with the other three classes increasing theirs by 126 per cent, 114 per cent, and 85 per cent, respectively. To you loyal supporters go the hearty thanks of a grateful class agent — your humble servant.

You remember how Ralph Sawyer, XII, had an unfortunate accident on a war industry job a year ago which cost him a leg; well, he now writes from 32 Love Lane, Kittery, Maine: "The end of the war effort here at Portsmouth Navy Yard has brought about the end of my job. It seems to be an appropriate time not merely to get out of government service but to find some town worth settling down in. Would there in Gardner, or other places of which you know, be any opportunities for a dignified old gent with a wooden leg to make a living? His principal skill is that of an engineer or superintendent of heavy construction jobs, or plant engineer maintaining and operating buildings, power plant, and general utilities; he has also had some experience as a chemist. His original specialty was geology." I could locate no opening here in "The Chair City" so, of course, referred him to Nat Sage '13, placement officer at the Institute. Drop Sawyer a line if you happen to know of an opening for him — he'd appreciate it no end.

"Change the name and not the letter . . .," an old adage runs, but I wonder what "change the name and not the number" denotes — you see, Munroe Pevear, IV, has changed his address from 71 Brimmer Street to 71 Chestnut Street, Boston 8. See you all later this month, I hope — specifically on May 31, June 1 and 2 at East Bay Lodge, Osterville, Mass. — ORVILLE B. DENISON, *Secretary*, Chamber of Commerce, Gardner, Mass. JOHN A. HERLIHY, *Assistant Secretary*, 588 Riverside Avenue, Medford 55, Mass.

1914

A few months ago these notes recorded the death of Porter Adams. Porter had always taken a great interest in our class reunions, not only the five-year events but also the annual dinners in Boston. He had been one of a small group who had helped underwrite several of these meetings. When his health began to decline so that he was prevented from attending our 30th reunion, he told your Secretary that he would like

to do something for the Class to replace the assistance he had given in his lifetime. This he did. In his will was the following bequest: "I give and bequeath to the Secretary of the Class of 1914 of the Massachusetts Institute of Technology the sum of five hundred dollars (\$500) to be used for such purpose as the members of said Class may determine. It is my wish, however, without intending to impose any condition with respect to this bequest, that it be expended on the earliest suitable occasion for a party of the kind which the members of said Class who survive me would most enjoy."

Boggs Morrison's eldest son, Howard A., Jr., a captain in the Coast Artillery Corps and recently returned from the Pacific, was married in Los Angeles to Lyda Blake on February 14. Captain Morrison is on terminal leave, and he and his bride are temporarily members of Boggs' household at Winchester, Mass.

The New York *Times* for March 14 carried on the financial page a picture of Gardner Derry in connection with changes in the management of the Westinghouse Electric Corporation. Gardner's position had already been announced in these notes. He is now vice-president of the B. F. Sturtevant Company, a division of Westinghouse Electric, located at Hyde Park, Mass.

Alden Waitt was one of the feature writers in the *Saturday Evening Post* for March 9, supplying an article entitled "Why Germany Didn't Try Gas." The *Post*, in summarizing the article, states: "General Waitt resolutely resisted a great temptation: To tell of the battles the Chemical Warfare Service actually fought. Forty-four of its units received citations or commendations, and 5,000 officers and men were decorated individually. It manned flame throwers in assaults, enveloped important operations and bases in protective smoke screens, and served with land, sea, and air forces. All this the general had to forego in complying, like a good soldier, with editorial orders limiting space."

On March 2, your Secretary's daughter, Priscilla, became the bride of Dr. Raymond V. Randall at the Church of the Epiphany in Winchester, Mass. Dr. Randall is a graduate of Harvard Medical School and is just completing his internship at the Massachusetts General Hospital in Boston. He is now being called to active duty as a first lieutenant in the Army Medical Department. Your Secretary's son, who is a first lieutenant in the Army Air Forces, is still with the Fifth Air Force on duty in Tokyo, but hopes to return to this country by late summer to rejoin his wife and daughter.

Remember Alumni Day, Saturday, June 8, with its 1914 preprandial meeting before the Alumni Dinner in the evening. — H. B. RICHMOND, *Secretary*, General Radio Company, 275 Massachusetts Avenue, Cambridge 39, Mass. CHARLES P. FISKE, *Assistant Secretary*, 1775 Broadway, New York 19, N.Y.

1915

By now you all know about our victory reunion on June 13, 14, 15, and 16 at the Cape Codder Hotel, Falmouth, Mass. (on the Cape), a wonderful place for a wonderful reunion. Already many men have signed up to come. A few are still doubtful.

Make up your minds now to be there. There will be plenty of room and plenty of fun for everyone. With class dues have come many interesting letters from all over the country. The sons and daughters of our classmates have done nobly in the armed forces. Read: What better leadoff than from Mary Plummer Rice, 308 Pondfield Road, Bronxville, New York? "Being unable to find a place to live is certainly not unusual enough to be interesting to anyone but myself. The one child I have left at home is trying — though I'm afraid not hard enough to succeed — to get into Andover, preparatory to Technology and Harvard Medical; so I may be searching for an apartment near Boston before long. . . . Our best wishes for success in house hunting and in getting her son into Tech, where we'll help him.

What an experience for Ken Boynton, after all these years in Mexico, to go to Europe! We'll be anxious to have his answer to my letter. He says: "I left Mexico in the early part of February and am about to leave for Europe next week. I shall be stationed in Europe more or less indefinitely, but as yet the location of headquarters has not been decided. For the present, you may use the following address: Kenneth K. Boynton, International General Electric Company of New York, Ltd., Crown House, Aldwych, London, W.C. 2, England."

We hope nothing will keep Bill McEwen from the reunion and the opportunity to see his son at Technology. "Let me know when you expect to have a class dinner or any other kind of a libation-dispensing contest. Bill, Jr., is back at the Institute, and I should like to combine the two visits in one trip." Bill's address is 422 North Main Street, Wellsville, N.Y.

Pretty nice for Loring Hall, 17410 Fairway Drive, Detroit 21, Mich.: "We drove out here to the Wigwam, Litchfield Park, Ariz., to soak up some of the well-advertised sunshine and have not been disappointed. Detroit's winters are so long and cold that it is a real treat to get out where it is dry and warm. The golf courses aren't so good as those we have at home, but they offer an excuse for getting out of doors. . . . If there are any 1915 men listed for Phoenix, let me know, as I might have an opportunity to look them up."

Good luck to Charlie Williams, Old Stone House, Spuyten Duyvil, New York 63, N.Y., after his Florida rest: "Hope and I have returned from a little trip to Florida, and I hasten to help Azel! I'm sorry I cannot get to Boston for the class dinner. . . . Give my best to everyone. . . . We had a grand time in Florida. We went to a quiet spot and rested, with a little golf, a little swimming, a little drinking, and a lot of loafing. Now I'm back, full of fight and looking for a job . . . I'll be seeing you!"

Elbridge J. Casselman, 512 Roslyn Place, Pittsburgh 6, Pa., writes: "Your appeal has not gone unnoticed, and your implications of class loyalty have borne fruit. Enclosed is the result. . . . I have been commuting from Pittsburgh to Bridgeport, Conn., for about a year, much to the disgust of my wife and to the general discomfort of myself. I am still at Mellon Institute officially and hope to spend more time there in the future. If a reunion is coming up, however, I want to know about it soon enough to plan to be close at hand at

the time." Yes, we'll expect Bridge to extend one of those Bridgeport trips right up to the reunion.

Here's an exceptionally fine letter: "I was very glad to hear from you and am enclosing my check for class dues. Azel, why the postage-paid and addressed return envelope? Have you come to the conclusion that your classmates are not energetic enough, or have insufficient volition, after writing a check, to look up your address, address an envelope, and stick a stamp on it? . . . Last week I went to Chicago to see my 20-year-old son, Parry, Jr., graduated (with a B.S. in mechanical engineering) from the Illinois Institute of Technology and receive a commission as ensign in the United States Naval Reserve. He has been an engineering officer candidate in the Navy V-12 program since July 1, 1943. He now has orders to report on March 1 to the Naval Training Station at Newport, R.I., for a short period of indoctrination preliminary to embarkation on a four months' Atlantic cruise. He is seriously considering taking graduate work after his tour of duty in the Navy. . . . According to the class notes in The Review, a reunion for some time next summer looks promising. I am *very much interested* in this matter and should like to know the details as soon as possible. The Oyster Harbors Club, Cotuit, is mentioned as a possible place for the reunion and, on the basis of our experience in 1940, would be an ideal selection. I have every confidence in the committee on arrangements and am assuming that they are aware of the fact that many of our automobiles are now six years older, so that those of us from the hinterland may have to travel to Boston by rail or air and then have a transportation problem to reach Cape Cod. . . . I find myself quite as busy as I was during the war. Reconversion has brought with it a full quota of problems to solve. . . . I want to hand it to you, Azel, for the swell job you are doing with the 1915 class notes. You surely do improve with age in more ways than one. You might be compared to old wine of superior vintage. Keep it up, and I will try to help you more than I have in the past. . . . Apparently there are very few 1915 men in this region. I see Herman Morse occasionally and at rare intervals run into Norris Kimball. You will rightfully conclude that many of us need a reunion. . . . I read with considerable interest in the February Review the account of the New York class dinner; you certainly must all have had one grand good time, besides accomplishing something. It was a good party, and I wish I could have been there." Parry Keller's address is 105 Fir Hill, Akron 4, Ohio.

Any of you chaps at all undecided about coming to the reunion should easily and quickly make up your minds when you read how your other classmates from all over the country feel. I am sure Sam Berkowitz, Deep Lake Farm, Lakeville, Conn., means his collective "you" for the Class, not individually for me, as I really like milk: "It was nice to hear from you, and I have marked my calendar for June 13 to 16. . . . When are you going to be up this way? I want you to taste my milk, and maybe you will reform and give up liquor!"

Let all these interesting letters and manifestations of fine class spirit be a reminder for you to pay your class dues. Now is the time!

Here's a proud family war record from Douglas H. McMurtrie, Bellevue Place, Gorham, N.H. You will remember that, while overseas in World War I, Doug married a French girl, so it must have been a thrill for his boys to visit their mother's family in Paris. He writes: "I was glad to get your letter. As you know, I've been with the Brown Company since graduation (except for the years of World War I) and am at present in charge of pulp research. Through our Canadian subsidiary, we got into war research long before Pearl Harbor and were instrumental in developing means of converting Canadian purified wood pulps into cordite, of which a huge tonnage was produced. For five years our problems almost wholly concerned war products, although in the pulp industry many of these are intertwined with peacetime specialities. . . . In a personal sense I was in the war by proxy, but I lost more sleep from having three sons in the E.T.O. than I ever did in the A.E.F. . . . Our oldest son, George, was graduated from Harvard in 1941 and that fall married Eleanor Browne of St. Louis and Radcliffe. Their son, Douglas Gordon, was born in 1943 and is now a husky lad approaching his third birthday. In 1943, George received the degree of M.S. in Chemical Engineering Practice from M.I.T. and completed work on a project there for the Office of Scientific Research and Development. He then volunteered for induction and served with the 94th Chemical Mortar Battalion in the invasion of Germany and Austria by the Third Army. Last week he was given an honorable discharge at Fort Devens and appointed as a research assistant in the petroleum refining laboratory of Pennsylvania State College, where he will continue advanced studies in chemical engineering. Robert, our second son, was graduated from Harvard at the age of 20, in 1943, with high honors. He specialized in organic chemistry and joined the staff of the Naval Research Laboratory in Washington, as a civilian. Since no naval rating was forthcoming, he resigned to enter the Army, and took part in the campaign of the base ports in France with the 66th Division. Now he's helping keep the Watch on the Danube, after which he plans to continue graduate work in one of the universities in the Midwest. Our third son, David, was attending Mount Hermon School in preparation for Harvard when the Army called him in 1943. He served as an antitank gunner in the 75th Division and came home recently with several battle stars and a Purple Heart, acquired in the invasion of Germany. He intends to enter Harvard in June. All three boys obtained leave to visit their grandmother and uncle and his family in Paris, to the huge delight of everyone concerned. Madeleine was especially happy, as she hadn't been able to get a message through to her people in four years. Marguerite, our only daughter, is at Northfield School, while Richard, the youngest boy, is in high school at Gorham. . . . The only classmate I've seen recently is Bill Campbell, erstwhile manager of manufacturing with the Brown Company, before his reincarnation as an M.I.T. professor. . . . With the easing of restrictions, I'm in hopes of getting to more reunions."

From an "office foxhole" by Howard L. King, 50 Longview Road, Port Washington

ton, Long Island, N.Y.: "Here's a contribution for the kitty. . . . If family doings are suitable for the class news, you may record that my daughter, Marion, married Lieutenant Mark P. Schlefer in April, 1944. Soon thereafter Mark went to the European theater and served as a bombardier with the Ninth Air Force. Marion continued at Swarthmore College and was graduated in 1945. The boy returned from the war, and now they are living a rural life on a small farm that we own near Putney, Vermont. . . . I was away from home most of the war years working on powder plant construction contracts that Mason and Hanger Company had from the War Department but am back in New York now. The company has resumed work on the Manhattan section of the Brooklyn-Battery Tunnel. This is a hazardous piece of construction. Rock tunnels are always risky, and the fact that we are blasting in the upper bay a half mile from shore doesn't make the work any more comfortable. This sounds so heroic that I hasten to add that it is perfectly safe sitting in the office."

Kenneth T. King, manager of the fine chemicals division of E. I. DuPont de Nemours and Company, Wilmington 98, Del., writes: "I am glad to know that things are progressing on our delayed 30-year reunion."

And from Colonel Clive W. Lacy, 261 Nahanton Street, Newton Center 59, Mass.: "Here's a 'help Azel' check for class dues. . . . You asked about my address. I think it is about time to drop military titles, but anyway here is the present correct address. . . . Two of my sons are home from overseas, and we expect the third in a few days." All the best to Clive out of service and congratulations from the Class to his son and his fiancée. The following is an excerpt from a Boston paper: "The engagement of Miss Marion Manning Coons, daughter of the late Mr. and Mrs. Lee Manning Coons of Shaker Heights, Ohio, to Capt. William Robinson Lacy, USA, son of Col. and Mrs. Clive Woodbury Lacy of Newton Center, has just been announced. . . . Capt. Lacy, now on terminal leave after serving for 22 months, in the European theatre, is a graduate of Phillips Exeter Academy and . . . Technology, where he was a member of Beta Theta Pi. He and Miss Coons plan to be married in March."

As a welcome back to Boston, Henry Sheils, Archie Morrison, and I had lunch with Gene Place at the Harvard Club (of all places). Gene will be with us at the reunion. To continue my epicurean sojourn, I had a friendly lunch in Boston with Clyde Mackenzie and a pleasant visit and lunch at Loring Hayward's house in Taunton, where I met his wife and daughter — all fine friendly contacts. — At the Stein-on-the-Table alumni dinner at the Boston Statler on February 23, the following 1915 men proudly represented our Class: Bill Brackett, Whit Brown, Marshall Dalton, Sam Eisenberg, Fanny Freeman, Larry Landers, Azel Mack, Archie Morrison, Pete Munn, Wally Pike, Pirate Rooney, Henry Sheils, Herb Swift (all the way from New London, N.H.), and Ed Sullivan. A splendid showing for us. — At a gay, noisy, riotous class dinner in Walker Memorial, M.I.T. on March 14 we settled the final details of the reunion. From past stories

you know what the dinner was like when you read who was there: Moulton, Hansen, Munn, Sindler, Frank Murphy, Woythaler, Young, Sheils, Hamburg, Louis Gale, Johnnie O'Brien, Waters, Rooney, Herlihy, Hayward, Eisenberg, Howlett, Morrison, Homan, Pike, Heath (with a son, Leslie Jr., a senior grade lieutenant), Brackett, Scully, Mack, and for the first time in all these years, Stanley H. Osborn, health commissioner of the State of Connecticut. We were glad to see Stanley again, and enjoyed his company and humor. We hope he will join us often. Our sympathy goes to Jim Tobey, whose father died in Boston on February 23. It was impossible for Jim to return for the Boston dinner, although he had planned to be with us.

More letters! Here's Otto Hilbert, 262 Cedar Street, Corning, N.Y., all set for the reunion: "I hope your request for reviving the treasury means that you are getting ready for another reunion. I should welcome a good excuse to get away for a few days and can think of no better place than the Cape. I met Charlie Williams in Corning a few weeks ago and was glad to hear about the plans. If I can do anything, let me know."

Let this letter from Henry Daley, in care of B. F. Sturtevant Company, Inc., Camden 4, N.J., with his typical humor, give you a laugh: "Attached is a dues check in response to your heartbreaking appeal of recent date. (One moment, please, while I read your letter again and dry my eyes.)

. . . Life has rolled uneventfully on since I saw you at the rip-roaring dinner in New York last December. . . . My oldest son, Henry, Jr., a lieutenant on the submarine *Scabbardfish*, took unto himself a wife when he returned from the Pacific late in December, and they are at present at Mare Island, Calif. He hopes to get out of the Navy shortly and plans to enter M.I.T. in the fall to study for his master's degree in Mechanical Engineering. . . . My second son, Tom, is a radar technician on the U.S.S. *Hooper Island*, now at Sasebo, Japan. He expects to return home in April and be discharged, to resume his studies at Penn State, where he had completed two years before enlisting in 1943. . . . My third, and last son, Bob, age 14, is at home with us. . . . I am looking forward to the reunion in June."

The sad passing of another classmate, Marston Harding, is recorded. He died on February 11, at "Sonar," Del Mar, Calif. — You owe it to yourselves to come to the reunion. It will "help Azel" to see you there! — AZEL W. MACK, *Secretary*, 40 St. Paul Street, Brookline 46, Mass.

1916

The 30th reunion of the Class is now definitely scheduled to be held at East Bay Lodge, Osterville, Cape Cod, Mass., on June 14, 15, and 16. Steve Brophy is again chairman of the reunion committee and may be reached at 247 Park Avenue, New York 17, N.Y. Three grand days are promised. Friday will be made interesting by a clambake at the beach. On Saturday we shall have the usual grand reunion dinner with no speeches, and Sunday forenoon will be the occasion of the usual class meeting with the taking of pictures and distribution of prizes. This reunion will be substantially less expensive than our 25th;

the hotel cost, including tips, but not including green fees and other off-the-premises fees, will be only \$10 a day.

Chuck Loomis will be on hand from Memphis, Tenn.; Jasper Carr from Wilkes-Barre, Pa.; Bob Wilson will lead the bridge playing and promises to come from Chicago to attend. We shall all be interested to hear from Dave Patten, now residing in Washington, about his unusual experiences in the Pacific. C. J. McCarthy has lately left for a ten weeks' trip to England and the Scandinavian countries and promises to bring back an interesting report in time for the reunion. Incidentally, Dave Patten received the Legion of Merit award for exceptionally meritorious conduct in the performance of outstanding services in the southwest Pacific area, from March 21, 1944, to August 9, 1945.

Isadore Richmond and Carney Goldberg have set up shop in Boston to practice architecture. Bill Drummond is back on the job, practicing architecture at 80 Boylston Street, Boston, Mass., under the firm name of William W. Drummond Company, architects and engineers. He recently published a very impressive pamphlet, copies of which doubtless will appear at our 30th reunion. — JAMES A. BURBANK, *Secretary*, The Travelers Insurance Company, Hartford, Conn. STEVEN R. BERKE, *Associate Secretary*, Berke-Moore Company, Inc., 11 Boylston Street, Brookline 46, Mass.

1917

A letter from Leon McGrady reports on a meeting with the members of the Class of 1916, which will be remembered as one of the classes that also attended the Institute — "A few weeks ago I was in New York City, and one evening at the invitation of Steve Brophy '16 I joined a group of the Class of 1916 for cocktails at the Technology Club. They were gathering to initiate plans for their 30th reunion next summer. I was highly honored to be invited, and it only shows, don't you think, that this world of the Good Neighbor Policy, the United Nations, and all that, is really having an effect, even on the Class of 1916. Among those arranging the reunion were Walt Binger '16, Bill Farthing '16, and Jimmy Evans '16. Also, P. Y. Loo '16, visiting New York from Chungking, China, was there, which was a pleasure for all. Ping is sailing back to China in a week or so in spite of the most urgent demand by all at the meeting that General Marshall or someone else should take care of his affairs over there until after the reunion. These remarks about the members of the Class of 1916 are hereby released for publication in the 1917 class notes, if you wish."

Rudolph Beaver continues to send in notes, clippings, and interesting items. Let this be a warning to anyone else who may be tempted to be as generous of their time and interest. Rudy has been asked to contribute one set of notes for next year and has accepted the privilege. Rudy never does anything by halves. In order to get the proper background for this column, he is planning a cross-country trip starting in May, going through Vermont to Montreal, Ottawa, Sudbury, Sault Ste Marie, and the Northern Peninsula to Duluth, then down to St. Paul and Minneapolis, and return via Chicago, Cleveland, and Buffalo. He believes this should cover an

appreciable portion of the members of the Class whose activities have not been ac-tively recorded in the past.

Rudy has noted an item in one of the Boston papers about the death on February 19 of Adelbert D. Hiller of Milton, who had been head of Veterans Administration affairs for New England. We understand that he was associated with the Class of 1914 although graduated as of 1917. We have also been notified of the passing on February 17 of Charles O. Gibbon, electrical-transmission engineer with American Telephone and Telegraph Company, whose home was in Short Hills, N.J. He was a graduate of Purdue and took graduate work at both Harvard and M.I.T., with his Institute degree as of 1917.

The New York group have conferred an oak leaf on Horace Ford in a second award of class membership. Horace has accepted it graciously and reaffirmed his confidence in 1917. William W. Wurster, Dean of Architecture, a member of the class of 1917 at the University of California, whence he was graduated in 1919 after service in the first World War, has transferred his M.I.T. affiliation from 2-44 to 1917. Dean Wurster already has many strong friends in 1917 and will be a welcome addition to all the class gatherings.

Charlie Locke '96 sends the following: "You may be interested to know that in a letter just received from your classmate, P. Y. Hu, he states that he has resumed his work in Pittsburgh with the Jones and Laughlin Steel Corporation, now that the steel strike is over. Having gone through all the plants of the company in the Pittsburgh district, he is now in the research laboratory which does all the research work and solving of all the difficult problems for the various company plants. He is still taking courses in evening school in Pittsburgh, and adds that there are about 60 Chinese students training around Pittsburgh along different lines, with nearly 25 in the Westinghouse operations alone. They get together every two or three months and are presently to have another meeting, with Professor Ely as the speaker, on the subject of smoke control for Pittsburgh and Allegheny County." — RAYMOND STEVENS, *Secretary*, 30 Memorial Drive, Cambridge 42, Mass. PHILIP E. HULBURD, *Assistant Secretary*, Phillips Exeter Academy, Exeter, N.H.

1918

At a time when many of us are glowing with the new title of "grandpa," Donald G. Merrill has become a father again, which raises his score to four. This is still short of Tom Kelly's five and Fred Washburn's six. Has anyone in the Class more than six? Fred says his boys are back from the war and mighty glad to be out. Since he is a safety engineer, naturally the boys come home whole. — Alex Magoun's two sons have returned. One is waiting to do graduate work at the University of Chicago, and the other was out just five days before he popped back into Yale as a junior.

Fred Philbrick has been reported as winter vacationing in Florida, but then Phil is president of the Grinnell Company and jolly well deserves it, too. Bill Will's book on small houses is on the best-seller list, they told us at the newsstand where we ran across it most recently. But Bill, what good

are plans with no materials for building? Eli Berman has been in the Radiation Laboratory during the war but now says he plans to reopen his radio stores.

At the Alumni Banquet on February 23, there was some talk about our 30th reunion, where to have it, when to begin working on it. The general consensus of opinion was that next year would be about right. — GRETCHEN A. PALMER, *Secretary*, The Thomas School, The Wilson Road, Roywyton, Conn.

1919

Fred Given recently had additional duties added to his present ones when he was made transmission apparatus engineer in charge of the work on transmission transformers and power apparatus. This information was printed in the February issue of the *Bell Laboratories Record*. Fred and Don Way attended the M.I.T. meeting at Newark in March.

The following changes of address have been received: William H. Bassett, Jr., a lieutenant colonel, has moved from Springfield, Mass., and his present address is the Army Industrial College, Room 1E-585, Pentagon, Washington 25, D.C. Harold W. McIntosh's new address is 657 Beverly Road, Mt. Lebanon, Pittsburgh 6, Pa. John W. Meader has moved from Garden City, N.Y., to 2857 East Overlook Road, Cleveland 18, Ohio. Mason S. Noyes has moved from Arlington, Va., to 3430 Morrison Place, Cincinnati 20, Ohio. After a long period of silence, we are glad to have word of Chen-Chi Pan, Room 404, 996 Bubbling Well Road, Shanghai, China, and Yang-Mo Kuo, 127 Rue du Père Hué, Shanghai, China.

Ervin M. Kenison, 1436 Chapin Street, Northwest, Washington, D.C., writes: "I am still here in Washington with the Federal Power Commission. I have a large backlog of status cases concerning power companies throughout the country. Also I am still a Washington "bachelor," unable to find a house to bring my family to." — Warren A. Maynard wrote from his temporary address of 140 New Montgomery, San Francisco, that he is located there for a few months on a special assignment with the telephone company. He states that he is "enjoying the lack of winter." — M. H. Role, 81 Walnut Park, Roxbury 19, Mass., writes: "I am still located at the same old stand, trying to do business as an electrical engineering consultant and contractor. From the notes sent to you by Jimmie Holt, you know about the boys I saw at dinner on February 23." — Word was received from Harold F. Marshall, 103 Morgan Avenue, Palmyra, N.J., and John L. Riegel, 342 Madison Avenue, New York City, but with no news.

Jim Holt reported on the Alumni Banquet as follows: "We were very sorry not to see your smiling face at the Alumni Banquet on February 23. I made a note of the men there in order to send you the necessary information for The Review. You will find the list on the back of the program, which I am enclosing." This list follows: Arthur H. Blake, J. H. Gould, Karl Nutter, Marshall B. Lee, Benjamin H. Bristol, George Michelson, Jesse Stam, Maurice H. Role, George W. McCreery, Hyman P. Selya, Eugene Mirabelli, Cutler P. Davis, and James Holt. And the program

carried the name of Eugene Mirabelli as a member of the Class Day committee. "February 23," he continues, "was a doubly interesting day for me because my younger son, Lawrence, who recently obtained his discharge from the Navy, took his entrance examination for Technology. He passed satisfactorily and began work today. You may be interested in knowing that George McCreery is now saving bottle openers instead of caps." — EUGENE R. SMOLBY, *Secretary*, The Lummus Company, 420 Lexington Avenue, New York, N.Y. ALAN G. RICHARDS, *Assistant Secretary*, Dewey and Almy Chemical Company, 62 Whittemore Avenue, Cambridge 40, Mass.

1920

At the time of writing it is too early to report on the attendance prospects for our big reunion on June 14 to 16 at the Sheldon House, Pine Orchard, Conn. If by any chance you didn't receive the letter containing complete information about the reunion, please get in touch with your Secretary at once.

A very welcome and encouraging note from Herb Dorr says that he has left Leominster, Mass., and is in Ilion, N.Y., at 94 West Street. Dr. Harold Stiegler has left Maryland and is in Andover, Mass., at 116 Salem Street. Murray Whitaker has moved from Hamilton, Ohio, to St. Augustine, Fla. (whether for the winter season or permanently, we don't know). Melville Powers, a commander in the Navy, is also in Florida, at 3805 Empedrado Street, Tampa. Merritt Taylor is with the Philadelphia Suburban Transportation Company at Upper Darby, Pa. Mal Lees' present address is 180 Godwin Avenue, Ridgewood, N.J. Charles Lawson is no longer a colonel and has come back to 12 Lombard Street, Newton. Another Floridian is Fred Zurwelle of Miami Beach. Can this be a trend?

Your Secretary had pleasant chats with Hank Caldwell, district manager of the Whiting Corporation, Al Burke of the Sharples Corporation, and Dan Harvey '21, of the Dorr Company at the Chemical Show in New York last month. He missed Tony Anable, who was also there with the Dorr Company.

I wish all of you could have been with me at the Alumni Council meeting on March 25 to see our classmate, Al Glassett, conduct the meeting as vice-president of the Association and do a grand job of it and then to hear the speaker of the evening, our classmate, Bat Thresher, who gave a wonderful talk on the admissions problems at the Institute. You can be absolutely certain that the Admissions Office is in good hands. Bat is doing a great job.

Here is the report on Don Mitsch by the Alumni Council committee on resolutions, consisting of F. B. Kittredge, J. D. Crosby, and Harold Bugbee: "WHEREAS, M.I.T., its student body, its Faculty, its Alumni as a whole and the Class of 1920 in particular, its Alumni Council and its executive committee have sustained a grievous loss as a result of the tragic airplane accident on January 18, 1946, which took the life of our able and beloved associate and friend, John Donald Mitsch;

"Professor Mitsch was a loyal and distinguished alumnus who had made many important contributions to the welfare and progress of the Institute as a member of its

Faculty from graduation in 1920 for 25 years with the exception of one year, 1924, with the W. J. Barney Corporation of New York as supervisor of building construction. Since 1940, Professor Mitsch had been an associate professor of structural engineering in the Department of Civil and Sanitary Engineering (Course I). In addition to his teaching duties in the field of stress analysis and bridge and reinforced concrete design, he had been active and universally popular for many years as a teacher and administrator at Camp Technology, the Institute's engineering camp in Machias, Maine. For some years he managed the Technology Mining Camp in Dover, N.J.

"Professor Mitsch's services to his alma mater were by no means confined to his departmental duties. He served with conspicuous skill and effectiveness as chairman of Class Day exercises every year for the past seven years. An active member of the Alumni Council, his talk on the Institute activities under his direction in connection with war development and procurement services was one of the highlights of recent years. He had been a member of the Council's executive committee since 1944. Appointed surplus property officer of the Institute, he became responsible for all purchases of surplus property and co-ordination of all information about, and negotiations with, the government in connection with surplus property both for the Institute and for the Division of Industrial Co-operation. The scope and significance of this activity, so capably organized and initially directed by Professor Mitsch, can hardly be overestimated.

"Fitting tribute to the personal qualities which endeared Professor Mitsch to his associates and helped to make his services to Technology and its Alumni so effective is the comment of his close friend and classmate and our Council's Vice-president, Alfred T. Glassett. Mr. Glassett writes: 'To me Don's most interesting characteristic was his even disposition and his ability to resolve any difficult problem into a satisfactory and logical conclusion. I never heard Don say a mean thing about anyone, and I know he kept a large group of people closely associated with each other through their common admiration and friendship for him.'

"Be it therefore Resolved, That this record of, and tribute to, John Donald Mitsch be inscribed upon the minutes of this meeting of the Alumni Council and be incorporated in the class notes of 1920 in The Review and that a copy be transmitted to Mrs. Mitsch in order that she and Professor Mitsch's two little children may know that the Alumni of M.I.T. share with his family an abiding pride in his character and accomplishment and deep sorrow at his untimely passing." — HAROLD BUGBEE, *Secretary*, 7 Dartmouth Street, Winchester, Mass.

1921

Lest you forget those dates in June: Alumni Day at Cambridge is set for Saturday, June 8, followed by our 25th reunion on Sunday, June 9, and Monday, June 10, at East Bay Lodge, Osterville, Mass., on the south shore of Cape Cod. Although Osterville is easy to reach either by car or train from Boston or New York, transportation will be provided from Boston so

that the entire group can proceed directly there after the Alumni Day program.

The Saturday program at Cambridge will mark the return to a peacetime schedule with the usual morning symposium, the outdoor luncheon in Du Pont Court, various local functions in the afternoon, and the traditional Stein Banquet in the evening with Warrie Norton, President of the Alumni Association, as toastmaster. Our reunion committee, headed by Dan Harvey, will then take over for Sunday and Monday at Osterville. At a recent meeting in Boston which Dan, Ray, and your Assistant Secretary attended, members of the local group took over the direction of transportation, program, class gift, sports, and other items on the schedule. This committee includes Chick Kurth, Mich Bawden, Josh Crosby, John Rule, Scripps Booth, Dick McKay, and Harry Rosenfield. However long and hard they labor, the key to the success of our most significant reunion is in the hands of you who read these notes. If you attend and induce your old pals to come along, you will make it the outstanding event we all hope for. Write Dan now and say, "Yes."

On February 23 a local Alumni celebration was held in Cambridge to mark the advent of the last official wartime graduating class. Lark Randall was general chairman of the committee in charge. Ray St. Laurent represented us as the speaker for the 25-year Class at the Class Day exercises in Walker Memorial. Ray did a superb job with a well-balanced fare of humor and homily to welcome the newest Alumni to the fold and to caution them on the future — evidently causing a commentator in the Boston *Traveler* to observe that "middle age is the time when you'll do anything to feel better except give up the things that are hurting you." Warrie Norton made the presentation of the 1946 class banner on behalf of the Alumni Association. That evening 47 members of the Class gathered at the Stein Banquet. Warrie presided, and Lark and Ray were also seated at the head table. Don Morse served on the dinner committee. Others present included Elly Adams, Bob Barker, Scripps Booth, Harry Butters, Attilio Canzanelli, Cac Clarke, Josh Crosby, Chick Dube, Fritz Ferdinand, Web Frymoyer, Harry Goodman, Walt Hamburger, Dan Harvey, Bob Haskel, Don Hatheway, Mel Jenney, Murray Jones, Amby Kerrigan, Al Kiley, Cordie Kohl, Chick Kurth, Hank Lane, Ted McArn, Leo Mann, John Mattson, Harry Myers, Phil Nelles, Herb Nock, Leo Pelkus, Herb Reinhard, Harry Rosenfeld, Fred Rowell, Slide Rule, Sumner Schein, John Sherman, Henry Stillman, George Thomson, Charles Thornton, Bill Wald, Al Wason, George Wetherbee, Frank Whelan, and Ev Wilson. Others on the committee of hosts but unable to be present were: Ed Farrand, Vic Homerberg, Irv Jakobson, Tom Proctor, and Al Wechsler. At commencement on the following Monday, Ray and your Assistant Secretary were included in the academic procession as representatives of the 25-year Class in the exercises in Symphony Hall.

Thomas W. Proctor, I, is psychic. As we wrote copy last month challenging him to a fistic exhibition with Allen Addicks, he was sending us a welcome answer to our Alumni Fund appeal, which says in part: "I am a structural engineer for the Glenn L. Martin Company, makers of the Martin

bombers, at their plant at Middle River, near Baltimore. I commute from my 116-acre farm, where we raise beef cattle, poultry, sheep, and hogs. It is a long time since I have seen any of the Class, and I wish those around Baltimore would get in touch with me at Deerfield, Darlington, Md." We retract the challenge, Tom, if you will stick to that promise to see the entire Class this June.

Saul M. Silverstein, X, has been elected president and general manager and Raymond A. St. Laurent, X, X-A, made vice-president in charge of sales of the Rogers Corporation, Manchester, Conn., according to an announcement of the board of directors on February 15.

Edmund S. Whitman, II, advertising manager and public relations director of the United Fruit Company, gave an illustrated lecture to the New York Railroad Club on February 21 on the subject "From the Tropics to You." Ed is a well-known writer of novels and has made numerous radio appearances. His headquarters are at the Company's New York offices at Pier 3, North River.

S. Paul Johnston, II, a captain in Naval Aircraft Service, neglected to tell us in last month's letter that he was awarded the Legion of Merit for his services as deputy director of the United States Strategic Bombing Survey in Europe and Japan. It has also been announced that Paul has been named director of the Institute of the Aeronautical Sciences, New York, and will begin his new duties after his retirement this month.

Charles H. Herty, X, X-A, assistant to the vice-president of the Bethlehem Steel Company, has been elected national president of the American Society for Metals, according to a note from our genial Alumni Secretary, Charlie Locke '96. After serving as physical chemist with the Bureau of Mines, Dr. Herty became director of research of the Metallurgical Advisory Board, Pittsburgh. Joining the Bethlehem Steel Company in 1934 as research engineer, he was appointed to his present position in 1942. The recipient of the Albert Sauveur Achievement Award in 1943, he is the author of numerous articles on the refining of steel.

Augustus B. Kinzel, IX-B, Vice-president of the Electro Metallurgical Company and of the Union Carbide and Carbon research laboratories, has been elected a director of the American Welding Society, according to a further note from Charlie Locke. Before joining Union Carbide in 1926, he had had several years of experience as a metallurgist for the General Electric Company and Henry Disston and Sons, also as a lecturer on metallurgy at Temple University and as a consultant. He received the doctor of science degree in 1933.

Asher Z. Cohen, X, Secretary-Treasurer and plant manager of the Olsen Preservative and Paint Corporation, 9-11 Delancy Street, Newark, N.J., writes that he can now attend the reunion. He says, in part: "I am a civilian again, after a stretch in the Army lasting almost five years, and am back with my organization attempting to readjust myself as rapidly as possible. The Army was quite an experience. I started out as commanding officer of an ammunition company and finished with the rank of colonel of Ordnance and as commanding officer of the Delaware Ordnance Depot,

Pedricktown, N.J. Some of the activities of the depot dealt with the training of civilian and military personnel in ammunition and experimental work on newer types of ammunition. Now that it can be told, my depot did most of the work in connection with the development of rifle grenades and 'bazooka' ammunition. On February 8, I was awarded the Legion of Merit medal." Congratulations, Asher, on joining that superselect group of 14 in the Class who have won decorations. Also our editorial thanks for the kind words about class notes — despite taxing The Review's patience and paper supply past the vanishing point last month!

Howard L. Vickery, XIII-A, a vice admiral and former vice-chairman of the United States Maritime Commission, died in Palm Springs, Calif., on March 21. Having been detailed by the Navy to the Maritime Commission in 1937, his resignation from the post because of ill health was accepted with regret by President Truman on December 29. Of his accomplishments the President said: "Our superb merchant fleet today bears eloquent witness to the thoroughgoing and efficient job which you have done." When, in 1942, more than eight million tons of merchant shipping were built under his supervision and, by the end of 1943, the tonnage had swelled to over 25 million, he was called a "miracle man." Born in Bellevue, Ohio, in 1892, he was graduated from Annapolis in 1915 and was a lieutenant in World War I. He received his master's degree with us and was then made supervisor of submarine construction at San Francisco.

He then went to the Boston Navy Yard until 1925, when he was lent to the Haitian Government for three years before returning to the Navy Bureau of Construction and Repair in Washington. He became technical adviser to the Governor General of the Philippines in 1929 and five years later was back in Washington as head of the secret war plans section of the design branch of the Bureau. Following an investigation of the *Morro Castle* disaster, he and his staff produced a report which revolutionized merchant shipbuilding. From 1937 until his retirement, he was with the Maritime Commission, and it was during this period that he is credited with bringing Henry J. Kaiser into the shipbuilding industry. In 1942 he also became deputy administrator of the War Shipping Administration, and in 1943 he was made chairman of the post-war planning committee which was organized to develop the American shipping industry.

Surviving are Mrs. Vickery, a son, Lieutenant Commander Hugh Vickery, who is stationed in Long Beach, Calif., and a daughter, Barbara, of Washington, D.C. On behalf of the Class, our sincerest sympathy is extended to the family.

Robert E. Waterman, X, Vice-president of the Schering Corporation and chairman of the North Jersey section of the American Chemical Society, presided at the section's March meeting when Robert P. Russell '22, President of the Standard Oil Development Company and director of the oil division of the United States Strategic Bombing Survey, told how our Air Forces knocked out Germany's chemical and oil industries. — Just arrived from Cambridge is a clipping of advanced age which tells of the talk to the

Kiwanis Club of New Haven, Conn., by Philip H. Hatch, VI, on the use of diesel engines in railway service. Phil is general mechanical superintendent of the New York, New Haven and Hartford Railroad and is completing 25 years of service with the road.

Victor S. Phaneuf, II, a lieutenant colonel in the Corps of Engineers, is reorganizing the Durham, N.H., architectural firm formerly known as Huddleston and Hersey under the new name of Hersey and Phaneuf. Vic is stationed at Fort Banks, Massachusetts, as engineer in charge of the Boston harbor defenses.

Philip A. Nelles, Jr., II, has been released from active duty as a major of Ordnance. Phil was purchasing, contracting, fiscal and historical officer at the Brooklyn Army Base, N.Y., port of embarkation. He is now industrial gas engineer of the Malden and Melrose Gas Light Company and makes his home at 45 Sunset Road, Stoneham, Mass.

Acknowledgment is made of a letter from Ralph Jope '28, thanking the Class for our \$25 contribution to the Alumni Athletic Fund.

Ambrose L. Kerrigan, VI, is back in Fitchburg, Mass., as general superintendent of operations of both gas and electric departments of the Fitchburg Gas and Electric Light Company. Ambry was a lieutenant colonel in the Signal Corps, having left the Fitchburg company in 1942 and later serving at Fort Monmouth and Fort Ord before going to the Pacific theater where his last assignment was on Okinawa.

Here's to seeing you next month in Osterville. Answer that questionnaire now whether or not your plans are definite for the "Re n on" — you and I ought to be in it! — RAYMOND A. ST. LAURENT, *Secretary*, Rogers Corporation, Manchester, Conn. CAROLE A. CLARK, *Assistant Secretary*, International Standard Electric Corporation, 67 Broad Street, New York 4, N.Y.

1922

The newspapers on March 9 carried an announcement by the Secretary of Commerce, Wallace, that a new incentive division has been formed in the Office of Domestic Commerce, which is directed by Al Browning. The new division will be headed by Charles E. Brokaw, whose release from the Army was reported in the February Review. Brokaw's division will study the applications of incentive programs to laborers, salaried employees, salesmen, and executives. This is a very timely study, and in Chuck's able hands we are sure the results will be of wide value to business at large.

William M. Hoge, a major general, whose troops captured the Remagen bridge across the Rhine, has returned to New England to become the Army's new division engineer, supervising all Army engineering work in New England.

Robert P. Russell, President of the Standard Oil Development Corporation, will receive the 1946 gold medal of the American Institute of Chemists. The projects directed by Russell during the war were of tremendous importance and are well known. They included new processes for the production of aviation gasoline, the synthesis of toluene from petroleum, a catalytic process for making butadiene for

synthetic rubber, mechanical smoke generators, incendiary bombs, flame throwers, and jellied gasoline. His accomplishments, as head of one of the country's outstanding research organizations, surely justify the high honor which has been accorded him.

Recent newspaper and trade journal items announce that Ed Ash has been appointed director of the appliance division and director of advertising of the F. L. Jacobs Company of Detroit. Ash joined Jacobs in 1940, and the company has since developed a broad line of household appliances in addition to their major line of automotive parts. Ed's wide experience in merchandising should insure a high success for Jacobs in the new field. It apparently takes care of Ed economically, also, because we have just received an announcement that on February 27 he married Mrs. Helen G. Stearns. So we wish Ed the best of luck in both these new lines of activity.

The Alumni Banquet on February 23 at the Hotel Statler was again a howling success for 1922. Forty-one of the Class attended. Whit Ferguson came on from Buffalo as usual and furnished quarters at the Hotel Statler for two hours or so of boisterous fellowship preceding the dinner. Class President, Al Browning, had expected to attend, but he called us on the telephone about six o'clock, saying that his hope of getting a plane to Boston had been dashed and he was still in conference in Washington. He sent his regards to the gang, and his message was highly appreciated.

The following men attended: M. L. Alpert, P. D. Appel, G. B. Bailey, H. O. Berry, M. C. Bloom, C. H. Burnham, C. Y. Chittick, H. A. Connor, A. B. Craig, C. K. Crofton, W. P. Dickerman, C. P. Dyer, M. R. Edwards, L. W. Emerson, W. T. Ferguson, Whitworth Ferguson, W. W. K. Freeman, M. H. Gens, G. D. Godard, M. J. Gordon, C. D. Grover, H. C. Ham, D. H. Harris, J. F. Hennessy, W. R. Hewes, O. H. Horovitz, Everett W. Howe, H. L. Humes, D. F. Kelly, H. B. McIntyre, G. G. Marvin, W. H. Mueser, G. W. Potter, Parry Reiche, S. H. Reynolds, A. F. Robertson, H. L. Rosengard, W. W. Russell, T. E. Shepherd, R. E. Sherbrooke, A. R. Tonon, S. W. Turner, M. A. Ulrich, F. T. Westcott, and F. H. Wing.

It is not necessary to remind you that our 25-year reunion is just a little more than a year away. We are already beginning to make plans, and a preliminary postal card questionnaire is being sent out. Please cooperate by returning it to us, together with any suggestions as to how and where the reunion should be held.

Because our Class Treasurer, Ev Vilett, is fortunate enough to have a small balance in the treasury, we contributed \$25 to the Alumni Athletic Fund, believing that this would be in accordance with the wishes of the Class. — CLAYTON D. GROVER, *Secretary*, Whitehead Metals Products Company, Inc., 303 West Tenth Street, New York, N.Y. WHITWORTH FERGUSON, *Assistant Secretary*, 333 Ellicott Street, Buffalo 3, N.Y.

1923

I seem to be getting a better response generally to the practice, of some 20 years' standing now, of asking members of the Class to explain changes in address for the edification of those who knew them at Technology. The first seven items this

month are the result of such requests, and may be an all-time high for any one month. Although I realize that this is a shaky base, statistically, for my conclusion, I like it, and think it may be a break in the false modesty of our early years out of the Institute, as a result of which news for these columns was very slim indeed.

Robert S. Coupland said he had to buy a new home in New Orleans on his separation from the Army. After two years in anti-aircraft work, he marked his separation by flying nonstop back to Washington from England in a C-54. He is married, has one daughter two and one-half years old and is practicing (I quote) Architecture. — Dave Houston confirms the fact that he has moved back to Wilmington, Del., from San Francisco and is director of the export department of the Hercules Powder Company.

Robert M. Carswell, a colonel, reports that he was placed on the retired list of the Army in April, 1945, while stationed at Camp Stewart, Georgia. He is living in Eustis, Fla. — E. S. Birkenwald has moved from Knoxville to Cincinnati; a step necessitated by his new assignment as engineer of bridges of the Western Lines of the Southern Railway System. He was previously in the bridge department of the Eastern Lines of the system, from 1924 to 1934, and since 1934 acted as assistant engineer in charge of design and drafting in the bridge department of the Central Lines. His present responsibilities cover a territory with 2,400 miles of main-line track.

Gerald L. White writes from "Fair Winds", Knowlton, in Quebec: "In 1937, I went as South American manager of the Sharples Corporation to Buenos Aires, where I remained until 1939, when I was transferred to England. In 1940, I joined the Royal Canadian Engineers, worked on the defences of Southern England, and finally went through the European campaign on the staff of the First Canadian Army. I was retired from the Army with a lieutenant colonel's rank in December. I am now in the process of setting up a business in Montreal in connection with the development and world marketing of a patented French heating boiler. As to my family affairs, I was married in 1936 and now have two children aged 7 and 5."

For several years Louis A. Metz has been acting as one of the honorary secretaries and as chairman of the Placement Bureau for the Institute in the Omaha area. He is moving to Chicago and after June 15 will be living at Kenilworth, Ill. He is vice-president and director of Ceco Steel Products Corporation and says that the occasion for the Chicago move is that the corporation is moving their administrative offices from Omaha to Chicago, where their main manufacturing plant has been located for some 10 years. As the best news of all, Louis reported that he had recently had a letter from Prasob Sukham, the following parts of which he quotes: "I left Siam in May, 1945, before V-J Day, on a special mission sent by the Siamese underground movement and after spending some time in India I arrived in the U.S.A. in June. My departure from Siam had to be carried out underground, since we were still under the domination of the Japanese Army; I therefore left Bangkok in the night in a small boat which took me out to sea to meet a

Catalina flying boat. I went to Boston and got your address as well as those of a few of my other close friends. Olie Jones was then in Washington, and we got together a few times. He told me something about you. We nearly called you up on the telephone one evening. Olie has now gone to New York. I've been corresponding with Ted Storb. He is in Allentown, Pa., and wants me to go and stay with him, but unfortunately I haven't the time. I have been in the government service since I went back home, and before leaving Siam, I was director-general of the highway department. I have three children — the eldest boy 15 years old, the second boy 13, and the youngest a girl, 12 years old. I was darn glad to come back after so many years, and now I am leaving by plane for home sometime soon."

Some months ago I said that many members of the Class had a story of interesting and different work in the war which would stand telling. I haven't been bowled over by responses to this invitation. Even when there were security strings on most tales, much could have been readily cleared for publication. Even if you are too bashful to tell your own story, let me have any publicity releases. Occasionally I can dredge up a good story like the one following about Palmer C. Putnam, which appeared in the April issue of *Esquire* in a story of Vannevar Bush '16 and the Office of Scientific Research and Development. As a prime example of O.S.R.D. contributions to the war is given the case of the Duck, converted from an Army truck, it says, at the insistence of Putnam, to produce an amphibious vehicle which made history in the war. This was apparently only one of the many items in which high ranking officers of the Army in Washington decided the idea was no good and then had it developed at the instigation of field officers better posted on the requirements. Anyway, as the story goes, some of the amphibious vehicles were built, Putnam following them through that process and, at Camp Edwards on Cape Cod, training men in their use. A Coast Guard patrol boat went aground three miles north of Highland Light off Provincetown at the very time that Putnam had some of the Ducks at that end of the Cape. The vehicles went out over the shoals (where a boat couldn't) some 400 yards offshore and rescued the crew. After that, the argument about the craft subsided, and 20,000 were built, the first being available in time for the Sicily landings. There are many equally significant stories of 1923 men in the scientific work of recent years; so let's have them.

In March, John Burchard, with two other speakers, presented a symposium before the Boston Society of Civil Engineers on the contributions of civil engineers to the war. He told of work appraising what bombs would do and on the offensive as well as defensive problems of bombing to which engineering contributed. I suspect that John plans to tell this story in *The Review* sometime. — Two clippings report on Bernard Lewis and P. B. Alger. The first, from the Boston News-Bureau in February, says that Bernard Lewis, a lieutenant colonel and chief of the grenade section of the artillery ammunition branch of Army Ordnance, has been awarded the Legion of Merit for furnishing "professional leadership to achieve exceptional

records in the development of rifle grenades, hand grenades, and fuses for both weapons. The other, also a February clipping and from the North Adams *Transcript*, says that P. B. Alger, formerly a lieutenant commander in charge of naval inspection at the Stromberg Carlson plant in Rochester, N.Y., has become associated with Sprague Products Company as an application engineer. That's Harry Kalker's company, if I remember rightly. — Dunbar L. Shanklin has been manager of the container division of Dewey and Almy Chemical Company of North Cambridge and on March 1, according to a release from Bradley Dewey, was appointed to the post of assistant director of the research laboratories of the company in charge of the container sealing research. Shanklin has been associated with the development work in sealing compounds for the company since 1924.

The final item this month arrives by a devious route from R. H. Blanchard '17 with a shove from the Office of the Dean of Students (Lobdell to Jope to Bond). It consists of excerpts from a letter dated January 4, which was received by Blanchard at Hood Rubber Company, Watertown, from Khye Beng Oon, brother of Khye Hong (Charlie) Oon, who died on last October 17 in Malaya. Charlie Oon had apparently been associated with the people at Hood, to whom his brother writes in part: "It was his very strong sense of filial obedience which urged his return to Singapore. Anyway, the war came to Singapore. Charlie's strong sense of duty kept him at his post when he could and should have evacuated. The Japs promised Charlie great wealth and millions of their 'banana dollars' if he would come out and co-operate. They wanted him to organize a plant with 10,000 men to manufacture car tires. He refused and fled to the island of Penang, in northern Malaya, where another of my brothers, Khye Seh Oon, lived. A life of seclusion, persecution, and constant fear told on his normally strong constitution, and he finally succumbed on October 17, six weeks after the forces of liberation had occupied Malaya. My family and his had already evacuated to India; even now his wife and family are ignorant of his demise; and we brothers intend to keep it so until their return here, though God knows when that will be, what with priority this and priority that." Charlie's brother was also an engineer, trained at Cambridge University in England. To this there is a clue, as evident from the letter. He closes by reporting that Charlie has a 17-year-old son in school at Bombay, for whom he expressed the hope that the son, like his father, might come to Technology. — HORATIO L. BOND, *Secretary*, 457 Washington Street, Braintree 84, Mass. HOWARD F. RUSSELL, *Assistant Secretary*, Improved Risk Mutuals, 60 John Street, New York 7, N.Y.

1926

Plans for the 20th reunion are rapidly progressing. As you doubtless know, it will be held on the week end of June 22 at the Wianno Club at Osterville on the Cape. This bids fair to be the best attended reunion which we have ever had, and every member of the Class is urged to make a strenuous effort to be present.

Raymond Mancha, formerly manager of the ventilation division of the Jeffrey Man-

ufacturing Company in Columbus, Ohio, has joined the Joy organization in Pittsburgh. After a contemplated merger, he will become vice-president in charge of ventilation of the Joy-Sullivan-Ladel combination. — Dudley L. Parsons, for many years public relations manager of the New York Trust Company and more recently vice-president and general manager of William E. Rudge's Sons, has opened a public relations office under his own name at 52 Vanderbilt Avenue, New York City.

The Secretary is in receipt of a very impressive engraved announcement that William A. Forrester, Jr., "has this day been admitted as a general partner in our firm," the day being March 1, and the firm being Lazard Frères and Company. Bill was a vice-president of the National City Bank until his assumption of this partnership. He is one of the several members of our Class who is achieving distinction on Wall Street.

Pop Constantine, out of the Navy, has returned to Longmeadow, Mass., where he has set up a firm under the name of Control Engineering Company. — After Navy service, Robert S. Chidsey is back with the Connecticut state highway department at New Milford, of which he is senior highway boundary engineer. — Westinghouse Electric Corporation has transferred John Driscoll from Pittsburgh to Boston, and he is now living in Framingham. — Arthur F. Hewlett, 2d, formerly of Hewlett, Long Island, is now assistant treasurer of Fuller Houses, Inc., in Wichita, Kansas. — Chester Peterson stopped in to see the Secretary recently. He is still active in the Signal Corps as a major and is at present stationed in New Jersey. Chester, you will recall, was on the staff of the Institute for a period after his graduation.

Present at the Alumni Dinner at the Hotel Statler on February 23 were the following: Steensen, McKeon, Dawes, Salmon, Tom Green, Flint Taylor, Broughton, Wilbur, D. S. Cunningham, Pickett, Stewart Perry, G. W. Smith, Cumming, and the Secretary. The group assembled before dinner in a reserved room at the hotel and discussed reunion plans. — JAMES R. KILLIAN, JR., *General Secretary*, Room 3-208, M.I.T., Cambridge 39, Mass.

1927

Just to prove that your Secretary hasn't aged beyond recognition, I can report that Al Nevers recognized me in the Detroit City Airport, and that we had lunch in the coffee shop there. Al says the business of selling construction machinery is very good. He was with Sullivan Machinery for 10 years, and then somebody gave him a coal mine at Kahoka, Mo. He spent seven years operating the mine but now is selling construction machinery and lives at 402 South Main Street, Mt. Pleasant, Iowa. His wife was Lulu Wilson of Wellesley, Mass. There is a daughter, 16, and a son, 10. — George Reginald Taminosian proves decisively that he hasn't lost his sense of humor. He reports that his rank has been changed from captain to mister and that his most valued decoration is a "new civilian outfit complete with ruptured duck." His back-to-normal address is 9 Baldwin Street, Newton 58, Mass.

As predicted, we now have further word from Edward D. Stone. His own account of

his activities follows: "For the past three years, I was an officer with the rank of major with the Army Air Forces, stationed at Headquarters, A.A.F., Washington, D.C. I was chief of the planning and design section, which had the responsibility for the planning and design of airfields and attendant building facilities for military fields in the continental United States. We were charged with the job of preparing master plans for the permanent development of airfields which might be retained in the postwar period. Four other men from M.I.T. were associated with me in this work. They were Donald S. Nelson '26 and Christian E. Born '34, both majors, Thomas H. Dryce '28 and Joseph B. Wertz. These men are all graduates of the School of Architecture. For the 10 years preceding the war, I practiced architecture in New York City. Most of my work was in the large modern residential field. I was associate architect, however, on the new building for the Museum of Modern Art and on some of the buildings at the New York World's Fair. We are currently engaged on plans for a 500-room hotel for the Panama Canal Zone and for a large school at Rhinebeck, N.Y., as well as a great many private residences."

It is almost exceptional now to find one of our classmates still with the armed forces. One of these is Leo J. Dillon, a colonel, who checks in as chief of the Fiscal Division, Office Chief of Ordnance, in the Pentagon Building, Washington. After a year as ordnance officer in England and Normandy, he became ordnance chief of maintenance in France and Germany. — In hearing from Alan S. Beattie, we have learned about the Oxzyn Company, which is part of the American Home Products Corporation and manufactures cosmetics at Clifton, N.J., and other places. It also pays Al's salary. Al's current address is McCoy Road, Oakland, N.J.

"After living for four years in the debilitating climate of the tropics, my first reaction to your letter requesting some news notes was a feeling of 'Oh ——, it's too much trouble.' Later I recalled how often in the past I had looked in vain for '27 notes and how, when they did appear, they concerned persons I did not know. We architects, in the sublimated isolation of the old Rogers Building on Boylston Street, had few opportunities to know the engineers of our Class. And I suppose they, too, in many cases did not even know that we existed." The foregoing, received from Ira D. Beals, may inspire others to take pen in hand. The balance of the letter is a regular travelogue. He continues: "It appears, however, that some engineers discover architects are necessary, as I have spent nearly all of the past four years with the Army Engineers in the Canal Zone. Although I left the States in December, 1941, to do architectural work on the Third Locks Project of the Panama Canal, that project was soon curtailed, and nine months later I was transferred to the Division Engineers, as I believe it was called. The usual periodic reorganizations, which occurred there, too, make me a little hazy on the various names the department has had. The office designed all types of Army buildings from two-holers to nose hangars, usually in the T/O type of construction of the bare essentials. It was interesting to

see how much material could be omitted from a building and still have it stand up. Protection against termites, in these, their happy hunting grounds, required special precautions, but the subterranean termites can be kept out of a building with the proper metal guards plus constant maintenance. One building in which no protection had been provided had so many of its structural members badly eaten by termites that it had to be entirely torn down less than three years after its completion. In another case, the termites built a tunnel (in plain sight) up the outside of a three-story concrete building to reach the wooden trusses in the roof. Careful maintenance is very necessary. There are also the ants and cockroaches to live with, but you get used to them, except the largest of the latter. But I hear that progress is being made in taming them and breaking them to saddle for use in jungle travel. The old refrain, 'It's not the heat but the humidity,' is particularly true in Panama. You have to slow down in order to survive, and the *marijuana* complex is easily acquired. But unless you work in the blistering sun or in the jungle, as so many soldiers had to, Panama in the shade is very comfortable, from the point of view of temperature. Last December, I returned to 246 MacArthur Boulevard, Oakland, Calif. A month's vacation on the way up was very enjoyable with stopovers in the Central American countries, of which the mountains, the Indians, and the Indian textiles of Guatemala appealed to me the most."

The Class seems to have members in every known type of job and profession, but now we have news of a 1927 "village superintendent." He is George C. Houston, and the village is Richland, Wash. Richland is a unique quasi-military, quasi company town, run by the Du Pont Company and the Army Engineers. Instead of electing a mayor and town council, the citizens are governed by the village office, headed by unofficial "Mayor" Houston. — The Waltham, Mass., *News-Tribune*, reports the promotion of A. Mankowich of Newport, R.I., to the rank of lieutenant colonel. The Colonel has been on active duty since May, 1942, having been a reserve officer at M.I.T. He has worked primarily with the mass production of magnesium incendiary bombs at the Pine Bluff, Ark., and Edgewood, Md., arsenals. After his release from service, Colonel Mankowich will resume his duties as materials engineer for the Navy.

The annual Alumni Day Dinner took place on February 23 at the Statler in Boston. Without even being asked to do it, Glenn Jackson has submitted the following letter concerning the events and those present: "The driving was not at all pleasant, and the walking was sloppy, but 11 members of 1927 were noted partaking of the roast beef and listening to the inner workings of the Radiation Laboratory, namely — Ed True, Wheat Hutchison, Joe Burley, Alf Berle, Judas Priest, Harry Franks, Phil Rugg, Andy Anderson, Dick Hawkins, Jim Chirurg, Bill Taggart, and yours truly. Although I didn't have a chance to talk to all of them, I did note that Ed True is now in the retail pharmacy business in Bath, Maine, that Jim Chirurg still holds our class laurels for the advertising game, and that Bill Taggart carries on for Dewey and Almy. Harry Franks is the

(2)

first man in our Class of whom I have heard as being in the garment manufacturing business. The 'now-it-can-be-told' department reports that Jim Chirurg spent six weeks in London doing a job for the British in 1942, that Bill Taggart flew over to England a year ago to watch out for his company's interests, and that I have lately returned from a three months' study of the German dyeing and printing plants, a special mission for the War Department. My trip was very interesting and instructive. I had some rough jeep rides and a few thrilling experiences on the back roads of Germany and Austria, but I wouldn't have missed it for the world." Glenn, in view of this excellent piece of work, I think we ought to make you assistant class secretary.

My own plans involve being in Latin America for the month of April, but I am leaving the compilation of the class notes in Miss Nilsson's capable hands. — JOSEPH S. HARRIS, *General Secretary*, Shell Oil Company, Inc., 50 West 50th Street, New York 20, N.Y. GLENN D. JACKSON, JR., *Assistant Secretary*, United States Finishing Company, Sterling, Conn.

1930

The Alumni Day dinner in Boston on February 23 found nine '30 men at the festive board. Your Secretary saw Jay Ricks, Jack Latham, Enoch Greene, Tony Savina, Bill Driscoll, George Shrigley, Bill Harris, and Stan Russell. One or two others may have been lost in the tremendous crowd present. Bill Harris is now executive assistant to the president of American Bosch in Springfield, after having recently managed the Providence plant. Bill's children are aged 11 and 14. Jay Ricks has formed an exporting and importing company bearing his name, located at 60 Wall Street, New York. Much of his business at present is with Egyptian firms, and he has a number of South American customers. Tony Savina's new job is with American Cyanamid and Chemical Corporation in Stamford, and he is most enthusiastic about it. — Missing from his usual place at the Stein-on-the-Table Dinner was the ever loyal Scotty, who has recently formed the Tech Instrument Company in Waltham with several other men. Searsport, Me., is the business address of Joe Wight, who makes sulphuric acid there for use in the paper industry and ran into your Secretary at the Hotel Commodore in New York a few days after the Alumni Dinner. Joe says the return of natural rubber is a boon to Bob Phelan's gum-making efforts with Beech-Nut up in Canajoharie, N.Y. — Hats off to Dick Chindblom, a lieutenant commander, who was married on February 2 to Eunice Eleanore Dale of White Haven, Pa. The Chindbloms are at home at 1720 20th Street, Northwest, in Washington.

Unable to be present with us on Alumni Day because of mumps was Reg Bisson. Another reason was the arrival of the third Bisson child, a boy. Reg has a seven-year-old son and a four-year-old daughter. He was ordered back to reserve status at Christmastime after four years of active duty which took him to South Africa, Egypt, the Levant, India, and China. In Calcutta, Reg had a chance to see Dan Hughes and Dan Lucey. He is now in Laconia, N.H., again in the building construction business with his father. — Al Deyarmond has had

an interesting assignment as a lieutenant colonel in the intelligence corps of the Air Technical Service Command in London. — We regret to note the sad news of the passing of Everett S. Cofran, a major, in Passau, Germany, as a result of a fire on January 7. He was a member of the American Military Government and had served in World War I as well, enlisting at the age of 15. Our sympathy is extended to his wife and family.

The showing of 1930 in the Alumni Fund campaign for 1945-1946 is most noteworthy, and when final figures are available, we should have every reason to feel proud, both from the standpoint of the number of contributors and the amount contributed to the Fund. So begin to feel proud now and continue the excellent work in the 1946-1947 drive!

When the wife of one of our classmates writes a letter to your Secretary about her husband's accomplishments, that is news! Mrs. Ray Binder recently sent along the information that Ray has been a full professor at Purdue since 1942. He earned his Ph.D., at Cal Tech in 1936, and his specialty is fluid mechanics. His book on that subject was published in 1943, and he contributes frequently to the technical press. During the war he worked half time for the Army Air Forces at Wright Field. Ray's wife is the former Betty Timberlake, and she holds an M.S. from Purdue. The Binders were married in 1937 and have a four-year-old daughter who is headed for the Institute unless Purdue exerts undue influence. — Another Alumni Day is scheduled for June 8! For many who were unable to get back to Tech during the war years, here's your first opportunity to make up for lost time. Lots of gas, no travel restrictions, so we'll look for you all. Remember the date, and plan to be with us! — PARKER H. STARRATT, *General Secretary*, 1 Bradley Park Drive, Hingham, Mass.

1931

As you have already been informed, the 15th reunion will take place at Old Saybrook, Conn., on June 15 and 16. We shall begin with lunch at 12:00 noon on June 15 and wind up after dinner on Sunday, June 16. Those of you who have not already indicated your intention of being present, should do so as soon as possible in order that the committee may know exactly how many will attend. Since these notes are being written in late March, we cannot include herein all details relative to the reunion; but they will have been covered by mail direct to you by the time you read the notes. We are looking forward to a grand time.

A recent letter from Howie Richardson comes in response to our request in the March class notes for comments on the 15th reunion. Howie agrees that Saybrook, Conn., is an ideal spot from many angles, and recalls the get-together we had at the 10th reunion, which was such a great success. Howie is now director of industrial relations with the Sylvania Electric Products, Inc., located at 500 Fifth Avenue, New York City. He states that he recently had dinner with Randy Binner, who lives in Hempstead, which is only five or six miles from Howie's residence in Manhasset. A correction is in order relative to the announcement in our March notes of the for-

mation of the firm of Hunter and Binner. Mr. Hunter is no longer connected with this firm; it is now C. R. Binner and Associates. Many thanks for your letter Howie, and we look forward to seeing you in June.

In a special ceremony early in February the Legion of Merit was awarded to Joseph McBrien by Brigadier General James K. Herbert, commanding general of the Los Angeles port of embarkation. In civilian life a public works consultant for the Tax Foundation, Inc., 30 Rockefeller Plaza, New York City, Major McBrien entered the Army as a first lieutenant in April, 1942. He served for two years as executive officer with the Trinidad District Engineers, and in May, 1944, he became adjutant of the First Engineers Petroleum Production Depot at Pomona, Calif. Assigned to this vital Army Transportation Corps installation in September, 1944, Major McBrien served first as chief of military personnel, later as director of allotments, and finally as deputy director of personnel. For the past few months Major McBrien has been director of personnel at Camp Anza, a separate command of this port in Riverside.

Elliot F. Humiston has been elected to the faculty of the Lowell Textile Institute. Mr. Humiston will give instruction in several courses in the engineering department, including physics, mathematics, and mechanical drawing. In particular, he will work with the special freshman class, composed of ex-servicemen, which was recently organized. He served three years as a first lieutenant in the Engineers in World War II. He spent two and one-half years overseas in the Pacific. Before his election to Textile, he was an instructor at the Mount Ida Junior College at Newton Center, where he taught physics, mathematics, and chemistry.

Among those present at the Alumni Banquet on February 23 were the following: August Hesselschwerdt, who is now professor of heating and ventilation at Technology and living in Milton; Al Coleman, who is with the National Defense Research Committee under Professor Draper of M.I.T.; Russ Pierce, who is running his own business in New Bedford; Henry Ahlberg, who is living in Needham and is general manager of the Star Brass Manufacturing Company of Boston; Phil Benjamin, who is with Polaroid Corporation in Cambridge; Johnny McNiff, who is with the Ordnance Department and is living in Winchester; Wyman Boynton, who came down from Portsmouth, where he has resumed his law practice after being in the service, and Gordon Brown, as well as yours truly. They all expect to be on hand for the reunion, and Hessie is taking an active part in getting the plans formulated for the 15th. You have undoubtedly heard from him by now. — BENJAMIN W. STEVERMAN, *General Secretary*, 11 Orient Street, Winchester, Mass.

1932

James E. Harper, Jr., a colonel in the Corps of Engineers, was awarded, at the end of last year, the Legion of Merit. Jim went overseas in April, 1942, and was honored for "exceptionally meritorious conduct in the performance of outstanding services in the Middle East from July, 1942,

to November, 1945." — Tom Sears has been out of the Army and back at his insurance since last November. Except for house hunting and being swamped with work, he has little to report. — Addison S. Hall of Hingham Center, a junior grade lieutenant in the Naval Reserve, received his discharge last February after a two-year tour of duty with the Hydrographic Office. Before entering the service he was employed in the inspection department of the Associated Factory Mutual Fire Insurance Company. — Dirwood M. Danforth, a lieutenant colonel, has returned from the Pacific and, according to a clipping, was temporarily making his home with his wife and daughter in Morristown, N.J. He entered the service five years ago as a second lieutenant.

J. A. Fellows submitted his resignation as assistant chief metallurgist of the American Brake Shoe and Foundry Company last November. His new affiliation is with the Carbide and Carbon Chemicals Corporation, and his duties for the time being will be associated with the Manhattan District project. — Fred Henderson of Wellesley has been appointed as director of a special secondary school program for veterans conducted by the Huntington School.

— From the change of address notices we glean the following news: Eustace B. Corson, VI, has moved to Mattapoisett from South Plainfield, N.J., where he worked for Cornell-Dubilier. Eugene F. Lynch, XIV, has moved from Painesville, Ohio, to Richmond, Va. Charles M. Thayer, I, has had the "captain" removed from his card and his address changed from Brooklyn to Chadds Ford, Pa.

Oliver H. Scharnberg became engaged in February to Shirley Leslie Pope of Swampscott, who attended the New England Conservatory of Music and is a graduate of the Erskine School. The wedding was planned for March 2. — CLARENCE M. CHASE, JR., *General Secretary*, 1207 West 7th Street, Plainfield, N.J. *Assistant Secretaries:* CARROLL L. WILSON, Office of Scientific Research and Development, 1530 P Street, Northwest, Washington, D.C.; WILLIAM A. KIRKPATRICK, Allied Paper Mills, Kalamazoo, Mich.

1933

Your Class Secretary has been nudged and reminded of late that it is high time he stopped procrastinating and compiled some information on the activities of the Class of 1933.

On March 5 the New York group got together at the Technology Club for dinner and an evening bull session which proved very interesting to all of us. Dill Collins was present and is still with Carlton Lamp Corporation in Newark. Dill was very instrumental in the development of miniature lamps. He mentioned that Bill Gray is now with the Raytheon Company in Chicago and that he has heard from Bill Miller, who is in Los Angeles. George Ropes is still with Acme Fast Freight in New York and described some of the interesting highlights of their wartime activities. He has recently heard from Asa Jewell, who now has a family of four and is raising tobacco in Franklin, Tenn. He also reported that Dave Smith is now vice-president of the Philco Corporation in Philadelphia. John Wiley was present,

having returned to American Airlines after a tour of duty with the Air Transport Command. John is working under R. S. Damon and is a representative on the wage negotiating committee for the negotiations with four-engine plane pilots. John has heard from Howie Sargent, who is with Pratt and Whitney in the research department, and from Duke Selig, who was in the Navy aboard a carrier. I. Harry Summer was with us. Harry has returned to the Lerner Shops and is in charge of distribution and merchandising control over children's wear. Harry became engaged at the end of 1945 and is currently looking for an apartment. He has heard of Clare Farr, who is with Du Pont in the construction division, and Bob Smith, who is production manager of the Defender Photo Supply division of the Du Pont Company in Rochester. Jack Andrews was still in production control at Titeflex in Newark, where he plans to continue until the first of April. Bill Keith is still with the National State Bank in Newark.

Emerson Norris has moved to Great Neck after being transferred by Sylvania Electric Products Company to their metallurgical research laboratory in Bayside. Norris was a production control engineer at the Salem Works before his transfer to Bayside. He mentioned Ralph Ranger as still being an engineer with Sylvania at Salem. Bill Rand is with the Sun Chemical and Color Company at Harrison, N.J., manufacturing colored pigments. Bill said he had seen Len Lindsay (his brother-in-law) during the Christmas holidays. Len is still with General Electric at Lynn. Bill has also been in contact with Mort Williams, who is a process engineer with Du Pont in Indiana, and had heard that Otto Putnam is with Althouse Chemical Company of Reading. Al Bruce is back with Dun and Bradstreet after a tour of duty in the Army with the Signal Corps over in England. Al works with Charlie Woods, also with Dun and Bradstreet, and says he hears from Jim Merrill, who is still with Raytheon in Waltham. Prentiss Lobdell is with the Esso Corporation at their Radio City offices, working on co-ordination economics. It is Lobby's job to do forecasting and co-ordinate future requirements—which surely sounds like Course XV coming to the fore again. Lobby had heard from Bob Swain, who is with Transcontinental and Western Air, Inc., planning the New York-Boston-Paris-Cairo run and was at the time in Egypt. He also had news of Charlie Faulkner, who is with Chase Brass in Waterbury as a production methods engineer. John Clark is assistant purchasing agent at Phelps Dodge Corporation in New York City. Ken Moslander is with the Linde Air division of Carbide and Carbon in Newark, N.J.

Ed Goodridge was also with us as usual and is doing bigger and better things with his Induction Heating Corporation. Ed's firm, the Induction Heating Corporation, as we may have announced previously in these notes, was awarded an Army-Navy "E" last spring. Also at the dinner was George Maynard, who still works for United-Carr Fastener in the electronics division. Stan Sapery had intended to come but was away skiing at the time. He is with Victor Metal Products in Brooklyn.

Choraso's sister dropped us a note in

response to our announcement for the dinner to say that her brother is still with the English Army somewhere in the Middle East and that he had not been heard from for some time. A note from W. W. Newton indicates that his status has not changed and he is still vice-president of the Geotechnical Corporation at Dallas, Texas. A communication from Morris Green at Iowa State College reads as follows: "I am happy to comply with your request for news about myself and one or two other '33 men. The last time I wrote you (1942) I was in Chicago. Since then I have enlisted in the Army Signal Corps, been discharged, and then proceeded to the University of Pennsylvania, where I researched for a year or so on sulphonamides. Last fall I arrived at Ames, where I am researching half time and teaching bacteriology the other half. That just about winds me up. I have been keeping in touch with Philip J. Coffey (now a lieutenant colonel in the Sanitary Corps). He had a very adventurous time in Nicaragua and on the West Coast as a sanitary engineer in the Army. He was all set to go to Japan when the war ended. He was lately discharged. I heard from him that C. T. Bradley, a major, has returned from Japan, much bemedaled, after several years in the Pacific Zone."

A letter from Ingie Madsen reads as follows: "To bring my history up to date, I was called on active duty as a first lieutenant in August of 1941 and assigned for a year to the area engineer's office as engineering officer of the Huntsville Arsenal project. A very interesting job, in the \$75,000,000 class, this had about all the types of engineering one could imagine—road, railway, and power line construction, power plant, terminal (river) factories, and what have you. I next spent a year in the Chief Engineer's Office in Washington, doing work which was the dullest of my Army career, a reaction most of the boys in Washington had. I was then for a very short time executive officer of a General Service regiment, but was pulled out and flown to India to take the job of chief of the Engineering Branch in the office of the chief engineer of the China-Burma-India theater. This was extremely interesting work, and we were responsible for all engineering design, planning, and reconnaissance, which covered a lot of ground, since the C.B.I. was primarily an engineering theater. I, personally, did a good bit of reconnaissance for the advance planning of some of our pipe-line and road projects, behind the Japanese lines, and did a lot of climbing in the Himalayas along the Tibetan border. My final rank was that of lieutenant colonel. Since I had 111 points on V-E Day, I was one of the high-point men in our outfit and came home last summer and was discharged at the end of my terminal leave in October. In the meantime, I returned to Pittsburgh and began work for the association of Iron and Steel Engineers as a research and standards engineer. I thought I caught a glimpse of you at the metal show but was not sure. I should like to have the addresses of the Course I boys and, if any of them ever get to Pittsburgh, should like to see them; my telephone during the day is Atlantic 6323 and at night, Penysville 1700."

John Longley wrote from Arlington, Va., that he had wanted to make our New

York reunion but could not do so. John is still in the service but hopes to be back in civilian clothes by summertime. — We also have a thumbnail sketch from Edward Palmer, who writes as follows: "Two days after the sheepskin at Symphony Hall, I took a dip into serological research in a Boston hospital and after three months gave it up to matriculate at Boston Teachers College. There, in the progress of one school year, I acquired a few more initials beside my name — Ed. M. Thereafter, I was one of those substitute teachers — you know, the scavenger type — waiting for some poor pedagogue to fall ill, break a leg, or shoot himself. In 1936, I returned to M.I.T. as a teaching assistant. After four months of that, I was appointed a health officer in Hingham, Mass. On last September 15, I upset the bucket of security and threw it out the window to become executive secretary of the Nassau County Cancer Committee. I don't know whether I have finally found my true 'calling' but suffice it to say that I am happy in my present work."

An interesting letter from K. C. Biswas in Calcutta deserves to be quoted here in full. On the Pravati Textile Mills, Ltd., letterhead, dated the 15th of January, it reads: "Thank you for your post card. It is very pleasing and encouraging to note your concern for the present activities of the old associates of our Class of 1933. As for myself, after coming back to India, I took to business and have since then floated a limited company, styled 'The Pravati Textile Mills, Ltd.' in Calcutta, of which I happen to be the managing agent. The mills have been manufacturing cotton and rayon fabrics for the last seven years and are now considered to be a class producer of these fabrics. I am also one of the managing directors of an engineering workshop in Calcutta named 'Machine Industries and Foundry, Ltd.' We have been endeavoring to make looms, other textile machineries, and various kinds of tools and implements in this workshop. I am director of the following concerns: Bagerhat Mills, Ltd., East India Hosiery, Ltd., Gripex (India), Ltd., Delta Engineering Company, Ltd., and Vasantika, Ltd. I am also connected with an association of mill owners of Bengal, known as the 'Bengal Art-Silk Mill Owners' Association,' being its honorary secretary and treasurer. We have here in Calcutta an association named 'Indo-American Association,' where we find the privilege of associating with some of our old M.I.T. friends. I shall be eagerly looking forward to having the recent addresses and activities of as many old friends of our Class as are available with you." It surely is good to hear from some of these distant classmates again.

The Montpelier, Vt., *Argus* mentions the return of Burton T. Ellis to the National Life Insurance Company after his lengthy term of service in both the Army and the Navy. An item in the New York Post of February 21 reviews the book *The Best of Science Fiction* edited by Groff Conklin and prefaced by John W. Campbell, Jr., editor of the Street and Smith Publications, Inc. Campbell is a member of the Class who studied nuclear physics for three and one-half years at the Institute. We also read of the marriage of Outerbridge Horsey to Mary Hamilton Lee in Baltimore. Horsey

has been a foreign service officer in the State Department in Washington. John C. King writes that he was released from the Army in November and is at present an engineer with the International Engineering Company in Denver, his address being 1579 South Clayton Street, Denver, Colo. We have received a note telling us that Lynn A. Williams is now a vice-president of Stewart-Warner Corporation in Indianapolis and general manager of the South Wind Heater division in Indianapolis.

We print in full the following letter from Carroll T. Newton, a colonel: "I'm afraid I haven't been too communicative during the past few years, but they have been busy times. I have not kept up with activities at the Institute since I left there in 1940, taking with me a master's degree in Civil Engineering, as result of a graduate year under the long-standing program whereby Regular Army Engineers are sent to selected engineering schools early in their careers. By the middle of 1941, I had held assignments as company commander in the newly activated and experimental 21st Engineer Aviation Regiment, as battalion c.o. in a colored training unit with the First Engineer Replacement Training School at Fort Belvoir and found myself at Fort Lewis, Wash., as a company commander in the Tenth Engineer Battalion of the now famous Third Infantry Division. A year of amphibious training on the West Coast resulted in my being assigned to the General Staff of the Third Division as assistant chief of staff (supply) with the rank of major. I landed on the west coast of French Morocco with the division on November 8, 1942, for the initial invasion of North Africa in the same capacity. I was transferred in January, 1943, to the Fifth Army on its activation in Africa. As a lieutenant colonel, still in Supply General Staff work, planning for the invasion of Italy was the big job. We hit the Italian beaches on September 9, 1943, and continued with hectic supply and logistic problems up the Italian mainland to the Arno. I even had a few weeks on the Anzio beachhead during the early and extremely hot period.

"On September 9, 1944, I landed in southern France, a few weeks after the invasion. At this time I was detailed with the grade of colonel as deputy to Brigadier General Clarence L. Adcock, S.C., who was the assistant chief of staff on supply, for General Devers' Sixth Army Group. General Adcock, you may recall, as a first lieutenant was Engineer R.O.T.C. instructor at M.I.T. from 1929 to 1933. I remained on the same job while the armies drove up the Rhone, froze in the Vosges, jumped the Rhine, and rolled across southern Germany into Austria to end the combat. In July, 1945, after more than three years of General Staff duties, I received with enthusiasm the assignment of commanding officer of the 368th Engineers General Service Regiment, imminently destined for redeployment to the Far East. Before we could embark, however, the war was over. I brought the regiment into New York Harbor on September 10. After a seven weeks' rest the Regiment reassembled at Camp Claiborne to be inactivated.

"Early in December, I reported at this station (United States Waterways Experiment Station, Post Office Box 631, Vicks-

burg, Miss.) and am extremely happy to be in a real engineering position again. This installation is the center of the Corps of Engineers for model studies, research, and investigation in the field of hydraulics and soil mechanics. Most of the projects are relative to the river and harbor and flood-control functions of the Army Engineers. My wartime duties resulted in an award of the Legion of Merit for work with the Fifth Army and an oak leaf cluster added thereto for service with the Sixth Army Group. I'm also entitled to sport the French Croix de Guerre with palm and to display seven campaign stars plus an invasion 'Arrowhead' on the European theater ribbon. An assortment of routine service ribbons completes the decorations. I have run across very few of our Class during this recent travel but am definitely interested in following their activities. There is a real sense of satisfaction in again settling into the routine of home life and renewing acquaintance with such familiar publications as *The Review*."

That completes our news digest for this issue and brings us up to date on many of the old gang. There are many of you, however, from whom we have not heard, and your secretary would surely appreciate a note from you, telling us where you are and what you've been doing. We also hope to have a substantial group at the June Alumni Day to make up for the abbreviated 10th reunion we were forced to hold during the depressing days of 1943. This reunion is scheduled for the eighth of June. If you plan to be in Boston around this time of the year, try to make it over this week end, and let's all get together. — **GEORGE HENNING, JR., General Secretary, Belmont Smelting and Refining Works, Inc., 330 Belmont Avenue, Brooklyn 7, N.Y.** **ROBERT M. KIMBALL, Assistant Secretary, Room 3-208, M.I.T., Cambridge 39, Mass.**

1934

Harrison Carlson recently had a paper published in *Industrial and Engineering Chemistry*. It was entitled "Absorption and Humidification" and reviewed the advances that have been made in that field from October, 1943, to last November. Since 1935, when he received his master's degree from the Institute, Harrison has been employed at the Experimental Station of E. I. du Pont de Nemours and Company at Wilmington, Del. After a year as semiproducts operator in the ammonia department, he did research in fluid flow, heat transfer, vapor-liquid equilibria, and distillation in the chemical engineering and metallurgical laboratory of the engineering department. Recently most of his work has been in the design of absorption and distillation equipment. With A. P. Colburn, he wrote a paper on the vapor-liquid equilibria of nonideal solutions which appeared in the May, 1942, issue of *Industrial and Engineering Chemistry*. He is a member of the American Chemical Society and is a licensed engineer.

Nicholas G. Dumbros, who was formerly with the production division of the Petroleum Administration for War, is now employed by the Ohio Oil Company in Findlay, Ohio. — Herbert Andrews has lately received his discharge, after spending five years in the Army, including one and a half years in the South Pacific and one and

3
a half years in Hawaii as a staff officer. His rank is that of lieutenant colonel. — Bob Roulston, our Class Agent, has also emerged from the Army as a lieutenant colonel and is now working for Scovill Manufacturing Company in Waterbury, Conn., as a liaison man between sales and engineering. — Raymond Levine, who is a first lieutenant in the Army, is stationed in the country's largest Quartermaster Depot in Jersey City. He is in the contract termination department. — Irving G. Gahm, who was a major in the Medical Corps of the Army Air Forces, has returned to civilian life after five and a half years of service and will resume his practice of medicine and surgery at 414 Walnut Street, Newtonville, Mass. In 1941 he was assigned to duty in Hawaii. His wife and two children went with him and were there when Japan attacked Pearl Harbor. When Major Gahm was transferred to another base, Mrs. Gahm remained in Honolulu as medical inspector for the Army Engineers.

Jack Bernstein, a lieutenant colonel, who served with the Third Army, is engaged to Miriam Alexander, daughter of Mr. and Mrs. Alex Alexander of Brooklyn, N. Y. Miss Alexander was graduated from Packer College Institute and received a bachelor of science degree from Columbia. — **JOHN G. CALLAN, JR., General Secretary, 184 Ames Street, Sharon, Mass.** **ROBERT C. BECKER, Assistant Secretary, Chile Exploration Company, Chuquicamata, Chile.**

1935

Here is some definite news about our belated 10th reunion! Jack Colby, not long out of the Army, has generously agreed to serve as chairman of the reunion committee. After a long discussion it was concluded by Jack, Bob Granberg, and your reporter, that we should stage the big affair in September of this year, rather than in June. Our Class has lately been far from active, to make a gross understatement, and we felt the need of time to stage a proper campaign. So be prepared to rejoin your classmates late this summer in a real reunion. In the meanwhile, we'd like to see a large '35 turnout at the Institute on Alumni Day, which falls on Saturday, June 8.

Jack Burton, after a meteoric career in the Army, is back in New York with his English wife and their nine-months-old son. Jack served as United States Army Ordnance representative to General Eisenhower's staff, and assisted in planning the invasions of Africa and Europe, having stations in England, France, and finally Germany. He has received the Bronze Star medal and the Legion of Merit and is now on terminal leave with the rank of colonel. "As for reconversion to civilian life," says Jack, "some progress has been made. I am now serving as vice-president and director of the National Bank of Far Rockaway, Long Island." The Burtons live at 117 Onslow Place, Kew Gardens 15, N. Y.

Jeff Farmer, after a long stretch with the Army in India, is now plant engineer at Hollingsworth and Whitney Company in Waterville, Maine, and glad to be back with his wife and two children. Jeff reported a few days' reunion with Bernie Nelson in Cairo last summer on his way home. Bernie, after several years in the African-Middle East theater, was due home early in March.

Mike Kelakos is still abroad, with the office of Military Government for Germany in Berlin. Lieutenant Colonel Kelakos, whose peacetime career in chemical engineering had brought him to the position of assistant superintendent in the caustic department of the Mathieson Alkali Works in Niagara Falls, is chief of the inorganic chemicals unit in the chemical section, industry branch, of the Military Government. During the course of combat operations, Mike was intelligence officer of the 49th Army Antiaircraft Brigade, participating in the European campaign from D-Day to the termination of hostilities and receiving the Bronze Star and Croix de Guerre.

Frank S. Besson, Jr., a brigadier general, who took a master's degree in Civil Engineering with our Class, is the youngest Army Ground or Service Forces general in the Army, at the age of 34. General Besson commanded the Third Military Railway Service on the Persian Gulf Command supply line to the Soviet Union.

On the home front, Luke Packard merits best wishes for the success of the new Technology Instrument Corporation of Waltham, Mass., of which he is treasurer and a co-founder. He and his colleagues, H. H. Scott '30 and R. W. Searle, were all formerly with General Radio, Luke as district manager in Chicago. Leo Dee is now with General Electric in Schenectady, in the electronics section of the industrial control engineering division. He reports that housing is just as invisible (or more so) there as elsewhere.

Jack Ballard was in the East last summer for several months, but your reporter failed to see him. Now back in Milwaukee with Globe-Union, Inc., Jack was in Lowell as superintendent with the Rewelec Manufacturing Company (an "offshoot," he said, of Globe-Union), making what he called Things for the Ordnance Department. Jack's letter is too good not to quote, even thus tardily: "The writer will doubtless never again have the opportunity to help with a project like this one: making a going business quickly out of a dozen or so people, an empty building, 150 acres, two fore engines, a pile of unsorted papers and unidentified materials, a set of superchangeable specifications, and a crew of construction men digging holes in floors and slapping up pipes and partitions. We'll never know for sure whether we did a good job: but we were just about on schedule at the gong." Wife Penelope and daughter Annie accompanied Jack on his venture. Before heading west, they hoped to "spend all available time touring New England without gas coupons, looking for monadnocks, ogunquits, nantuckets, pemigewassets, and penobscots." We'll try to get him east again in September.

Here are excerpts from an even older letter from Bart Chapman that gave some interesting news. Eric Jones has his own business in Philadelphia, the Dellenbarger Machine Company, formerly confectionery equipment manufacturers. They are making sub-assemblies for the Air Forces. Zay Curtis is with United Aircraft in Stratford, Conn., and Bart held him personally responsible for the zooming Corsairs and swarming helicopters that disturbed the peace of the Chapman household in Fairfield. We'll let Bart tell his own experiences

in the ammunition business: "At the start of the war in Europe I spent almost six months at the Frankford Arsenal working out equipment requirements and specifications for plants Remington was to operate for the government. Early in 1941, I went to Denver as resident engineer on construction of the Denver Ordnance Plant. Just after Pearl Harbor, I was assigned to similar advisory work to architects, layout engineers, and construction contractors on the Lake City, Mo., Denver, Utah, and Lowell, Mass., ordnance plants. That kept me on the go a good two years. Last year I rejoined the Bridgeport Works organization as process engineer for the .30 and .50 caliber case areas. In December, 1944, our schedules for .30 were boosted to the limit, and ever since, I've been busier than a cat with three litters, on trouble shooting and improvement measures in that area."

Remember, our reunion is coming in September. Watch for announcements.—WALTER H. STOCKMAYER, *Acting Secretary*, Room 6-227, M.I.T., Cambridge 39, Mass. DUDLEY A. WILLIAMS, *Assistant Secretary*, Room 6-127, M.I.T., Cambridge 39, Mass.

1936

Here it is — the news you've been waiting for about our 10th reunion! Plans have been made for an occasion that will be long remembered by all who attend. The best way to tell you about them is to start at the beginning on Friday afternoon and pass lightly over the high spots of the week end. For each of us the details will vary, since we all have our own ideas of what will be appropriate for the occasion, but the general scheme runs as follows:

On Friday afternoon, June 7, we begin to gather at the Parker House in Boston, where rooms have been engaged for all those who have indicated that they will require overnight accommodations. A special stag banquet has been arranged for Friday evening with plenty of good food and fellowship. After the banquet the reunion will continue on into the night in accordance with individual ideas. On Saturday, we all participate in the Alumni Day at M.I.T. (Those who want, or can eat, breakfast will arrange that for themselves.) The Alumni Day includes luncheon in the Great Court, open house at M.I.T. in the afternoon, and the Stein-on-the-Table Alumni Banquet at the Hotel Statler in the evening. After this day of activity, we will assist one another back to our quarters at the Parker House. Again each man is left to his own devices until Sunday afternoon, when there will be a farewell cocktail party at the Parker House. Wives and girl friends are invited to attend this latter affair and meet for themselves the college friends they have heard so much about. And at about this point a lot of weary members of the Class will drag themselves home.

Those who returned the questionnaire card indicating an interest in the 10th reunion have already received the necessary reservation forms and information on the times of the various events. Any others who hope to attend should obtain the necessary forms from J. C. Austin, Flintkote Company, 220 East 42d Street, New York 17; R. M. Sherman, Room 2-377, M.I.T.; or A. E. Hittl, 530 Norwood Avenue, Buffalo 13. Reservations must be made for all the Friday and Saturday events, and those who

have not returned their reservations should do so without delay. We shall try to provide for everyone, but at this late date we cannot guarantee that all available reservations will not have been taken up. So don't delay, but get in touch with us right away.

Preliminary returns have shown a remarkable interest in our reunion. We expect to have well over one hundred of the gang attend at least some of the events. Those who have indicated their intention of coming include: Joe Ackerman, Louis Adams, Olie Angevine, Jack Austin, Art Baker, Jim Baker, Al Bartlett, Ronald Beckman, Slim Beckwith, Dick Bryant, Dan Burns, Joe Burns, Bob Caldwell, Hank Cargen, Fred Carten, Gus Chandler, Gerrie Chapman, Hank Christensen, Arnold Clarke, John Coffin, Ben Cooperstein, Sid Cornell, Jim Craig, George Crummey, Al Dasburg, Ed Dashefsky, Dick Denton, Dana Devreux, Dick DeWolfe, Vince Dobert, Eugene Eberhard, Bob Edwards, Ed Everett, Wendie Fitch, Web Francis, Bill Garth, Bob Gillette, Martin Gilman, Bernie Gordon, Joe Gratz, Mallory Graves, Al Gray, Charlie Gray.

Also Maro Hammond, Dick Harvey, Tony Hittle, Marshall Holcombe, Bill Hope, Hank Johnson, Stan Johnson, Bob King, Felix Klock, Dick Koegler, Walter Lane, Paul Lebenbaum, Roger LeBlanc, Nick Lefthes, Frank Lessard, George Lewis, Larry Lombardi, Aaron Loomis, Sam Loring, Joe Lukesh, Saul Lukofsky, August Mackro, Boris Maximoff, Art Mayo, Bush Merrill, Bill Metten, Harold Miller, Norm Moore, Al Musschoot, John Myers, Tom Nelligan, Bill Nelson, Seth Nickerson, Phil Norton, Bob Osborn, Vernon Osgood.

And also John Pappas, Frank Parker, George Parkhurst, Mike Paskowski, Dick Patterson, Jim Patterson, Harry Pekin, Carl Peterson, Larry Peterson, Bill Post, Bill Prudente, George Ray, Paul Robbins, Elliot Robinson, George Robinson, Bob Saslaw, Bus Schliemann, Winthrop Scott, Dorian Shainin, John Sharp, Warren Sherburne, Bob Sherman, Kay Short, Stan Smith, Morril Spaulding, Ken Swaine, Ariel Thomas, Gordon Thomas, Fletch Thornton, Larry Tobey, George Trimble, John Viola, Milner Wallace, Mark Warmuth, Halsey Weaver, George Webb, Carl White, Py Williams, Bob Worden. Up to the time of going to press, that's the list of our friends who will be there. How about the rest of you? Don't miss the fun, and do add to our enjoyment by joining us.—ANTON E. HITTL, *General Secretary*, 530 Norwood Avenue, Buffalo 13, N.Y.

1937

Evidently all you fellows have your noses to the grindstone, as I have, and aren't even bothering to look around or move in the general direction of this column. From away over in Calcutta, however, we hear that Jerome Salny, a lieutenant colonel in the Army Air Forces, received the Bronze Star for his work as chemical officer. He "... organized and supervised the operation for disposal of toxic chemical ammunition stored in the India-Burma theater. His competency, efficiency, cooperative spirit, energy, initiative, and leadership impressed all personnel with whom he worked. His efforts were responsible for the success of the disposal of toxic chemical ammunition, an operation of like

magnitude never before having been accomplished in a short time without serious injury to any personnel or property. . . ." Nice going, but I wonder how he would organize the disposal of the "toxic" drivel I have to dish out in between items like that and the next about Lee Wasserman, who was commended by General Arnold for his work at Wright Field on flutter testing. He not only cooked up the tests but flew in the test ships while they tried to shake off the wings or control surfaces. Lee is chief of the Flutter Unit, Dynamics Branch Headquarters, of the Air Technical Service Command.

You will be spared further toxicity since Vic Kron has written a very interesting letter from his ship in the Pacific. His address: Lieutenant (Junior Grade) R. V. Kron (MC) U.S.N.R., U.S.S. *Chevalier* (DD 805), care of F.P.O., San Francisco, Calif. — (and butter sold on dark nights). The letter: ". . . you will note that I am still very much in the Navy and at sea. There has been a lot of water under the bridge since Tech days, and the best I can do is give only a brief résumé of it, tidal wave by tidal wave. We'll begin with medical school, since you knew I had begun it. I did finish in December, 1943, and spent the last six months of study in uniform under the Navy's V-12 program. From there I went to Johns-Hopkins Hospital for nine months to begin surgery training; and at the end of that time I volunteered for active and sea duty rather than further deferment, since the Navy was getting behind the eight-ball and I thought I could help out. On the 10th of October, 1944, I reported to the Naval Hospital at Chelsea, Mass., and moved on to Bath, Maine, the first of November to take over as medical officer on a destroyer that was built there. The ship was commissioned in Boston on December 22, and we spent the winter in Bermuda shaking down, before returning to Boston for two months or so for some changes which would make us better suited to operate with the fast carriers.

"We bid adieu to the United States in April and headed for duty in the western Pacific, going through the Canal and pausing briefly at Hawaii and the Philippines. During July and August, we operated with Halsey and his Third Fleet in the strikes on Tokyo and Japan, but saw practically no enemy action, because the Japs were about ready to quit, and they couldn't find us anyway. When the war ended, we were about 150 miles from Tokyo and continued hanging around there while the occupation forces were gathered. Finally, we moved into Tokyo Bay as part of a guinea-pig force the day before the occupation troops came in — so actually I was in the first warship to move into Tokyo Bay. Being in one of the most recently arrived destroyers, we stayed in the Bay as the Navy part of the occupation and spent Christmas and New Year's in the shadow of Fujiyama. It was interesting to get around Tokyo, Yokohama, and other parts of southern Japan, but after four months of anchor in one spot, we were glad to move on January 1. At present [January 22] we are roaming around the Pacific, mainly . . . [for] . . . a little sightseeing, I think. At any rate, we shall have a few days at Saipan, Tinian, Guam, Manila, and maybe even Tawi-Tawi (a minuscule island near Borneo).

"After September the Navy reverted to a peacetime quota of one medical officer for each division of four destroyers, and whoever decided in Washington, drew the short straw for me. So since then I have had four destroyers under my care, but there is very little to do medically on all of them. I rode my original ship until a few days ago, when she developed some engine trouble requiring a return to the States. So I was ordered to change over to another that would stay out here. Consequently, I have the dubious honor and distinction of having been out of the States the longest, which, of course, calls for a celebration at every available officers' club, to help pass away the time until July or August, when I, too, expect to head for the U.S.A. My plans for the return are to go back into hospital training and try to pick up surgery where I left it, providing I am not so old but that I can still stand the rigors of a 20-hour working day for two or three years. I have no idea yet where I shall go because it is still very indefinite how long I shall remain essential to the Navy." Thanks, Vic, we shall certainly be glad to see you when you do return. — WINTHROP A. JOHNS, *General Secretary*, 34 Mali Drive, North Plainfield, N.J. PHILIP H. PETERS, *Assistant Secretary*, 159 Glen Road, Wellesley Farms 82, Mass.

1938

The few of us who had the privilege of reading the Boston *Traveler* of February 11, noted a very interesting article about the plywood boatbuilder of Cohasset, Francis Hägerty. Frank has adapted the use of laminated plywood, popular during the war for certain aircraft applications, to the construction of racing shells, iceboats, and the 24-foot International 110 sailing craft. He has also introduced several innovations in the design, materials, and fabricating technique used in building racing shells. We're glad to learn that Frank made such a happy capitalization on his scholastic, as well as extracurricular, activities at the Institute.

We collected several news items from Bruce Leslie, who seems to keep up pretty well with his classmates in Course II-A. Bruce, himself, is located in New York with the Associated Factory Mutual Companies, returning to them after a brief 10 weeks' hitch in the Maritime Service as a chief machinist's mate, beginning last June. Bruce reports that Howard Banzett is in the production department of the Edgewater, N.J., plant of the Aluminum Company of America. Howard is rumored to possess quite a workshop in his home at Dumont, N.J. Gordon Hunt, chief metallurgist at the Torrington Company, is reported to be raising a fine boy and a fine girl in addition to a fine garden at his Canton Center, Conn., home. Incidentally, we think he's pretty smart because a vegetable garden is still a mighty handy thing to have, even though they are no longer called "Victory" gardens. Now, in contrast to the nice homey existence Gordon has developed, we hear that Karl Fransson is flying all around the country (literally) in connection with his work on jet propulsion in G. E.'s turbine engineering division. But Karl, too, may be settling down, as he was married in November to Frances Kelly in Whitehall, N.Y. Apparently Dave Beaman and Giff Griffin are no longer wrapped up

in Army life. Dave is doing mechanical engineering for Frederick Hart and Company in Poughkeepsie, N.Y., and is the proud father of three daughters. And Giff is an assistant engineer with the Public Service Electric and Gas Company in Newark.

Your ex-Secretary, Dick Muther, is now on his last assignment for the Navy, teaching production line techniques to Navy Air Officers at the Alameda Air Station. Dick had a very busy week along in February, which culminated in his marriage to a young lady from Washington, D.C., and McDougal, Ark. The wedding took place in Arkansas on February 22, with a very nice trip to California in prospect, if Dick's car holds together long enough!

Ira Lohman is now out of the Coast Artillery Corps of the United States Army, after a rather prolonged assignment with an antiaircraft gun battalion in India, Saipan, and Japan. The Emerson Electric Manufacturing Company has signed up Ira for their St. Louis plant, to which he will move this summer after completing some special graduate courses at the Institute. — We hear from Bill Gibson that he expects to be out of the service in July. He hopes to go back into foreign service probably for duty in Russia. More power to you, Bill. — Mat Boissevain spoke to the Jones River Village Club in Kingston, Mass., last November, on his home country, Holland.

We have had word that John Cunningham was married in February to Mary Frances McElligott in Manchester, N.H. John is now out of the service and back working with the John Hancock Life Insurance Company. Another wedding is that of Dempster Christenson in Sioux Falls, S.D., last January. He was married to Dorann Camp. Demp is now out of the service and working with his father in Sioux Falls. Finally, your Assistant Secretary has again cracked into the news with a baby daughter, born on March 10 and named Anita Parmelee Wilson. Both mother and daughter are doing very well, and father is pretty proud to have a son and daughter. — DALE F. MORGAN, *General Secretary*, Carbide and Carbon Chemicals Corporation, 30 E. 42d Street, New York, N.Y. ALBERT O. WILSON, JR., *Assistant Secretary*, 32 Bertwell Road, Lexington 73, Mass.

1939

From Aaron White comes news of the activities of some of the Course XIX men, as follows: Jim Yee recently began as a metallurgist with the Chinese Air Forces and is currently engaged in studying manufacturing techniques. He expects to return to China, whence he came when he was about eight years old. Alec Squire, until lately, was working at the Watertown Arsenal and is now with Westinghouse at East Pittsburgh, doing powder metallurgy research. Roy Haworth, we find, is working at Lehigh Engineering at Easton, Pa. Those mentioned thus far were all at the Metals Show held in Cleveland early in February; they did well to find one another in the crowd of some 35,000. Of the others from '39 who were at the Watertown Arsenal, Stu Arnold has departed, but Leonard Jaffe remains. Leonard is taking courses at Harvard, preparatory to receiving, before very long, his doctorate in metallurgy. We hear, too, that Zeke Losco is now out of the Army and has received his doctorate from

Carnegie Tech; he is also now with Westinghouse. And while on the subject of doctorates, Louis Castleman will shortly return to the Institute for his, after about three years in France.

To quote Aaron's letter on the subject of his own recent (and busy) doings: "After five and one-half years of service for Uncle Sam at Watertown Arsenal, I resigned just before last Christmas. After New Year's I went to work as metallurgist at the Stamford, Conn., research laboratories of the American Cyanamid Company. Because of the critical housing situation, I am rooming in Stamford while my wife is maintaining our apartment in Boston. During my weekend visit home on February 2, our first child, David Steven, weight 6 pounds and 4 ounces, was born. With hardly time to get acquainted, I had to take a train to Cleveland, where I attended the Metals Show. From what I can gather, mother and son are doing well."

We hear of another of our prominent associates through the public relations office of the Army Air Forces Weather Service at Bolling Field, D.C., as follows: Harry Wexler, who wears the Air Medal for participating in an airplane flight through a hurricane, was relieved of active duty at the Army Air Forces separation base here after three years with the A.A.F. Weather Service. Major Wexler, who spent eight years with the United States Weather Bureau before entering the A.A.F., was awarded the Air Medal for acting as technical observer on a flight by an A-20 Havoc from Bolling Field on September 14, 1944, which penetrated the great Atlantic hurricane then raging off the Virginia Coast. Important new knowledge concerning the nature of hurricanes was gained by the flight, which encountered such rough flying conditions that the crew described them as "like going up and down in an elevator." Major Wexler was a senior instructor at the A.A.F. Weather School, Grand Rapids, Mich., from his entrance into the service in November, 1942, until September, 1943, when he became research executive in the Weather Division, Headquarters, A.A.F. Last July, he came to Asheville, N.C., as chief of the development branch of the A.A.F. Weather Service. After completing undergraduate work at Harvard University, Major Wexler entered Technology, where he earned his doctor of science degree. As a meteorologist for the Weather Bureau, he gained an international reputation in his field by writing scientific papers on polar air and cold waves, and other subjects. Major Wexler's home is in Arlington, Va., where his wife resides.

From a hasty telephone call, we learn that Rocky Roberts has recently come to the Bridgeport Brass Company on a temporary assignment. Pi Beta Tau revivication is in order. Say no more!

And from the faithful News Clip we have received the following several items: William M. Chance, Jr., who has been promoted to the rank of lieutenant colonel in the Corps of Engineers, U.S.A., at the age of 27, is probably one of the youngest men ever to hold this rank in the Corps of Engineers. He has served overseas in the Pacific area and holds the Bronze Star medal, the American Defense medal, the Victory medal and wears the Asiatic-Pacific campaign ribbon with three battle stars and the

American theater ribbon. Last summer he was married to Dorothy Jean Cox of Sprague, Wash. — Alan P. Schreiber, a lieutenant in the Naval Reserve, was released from duty at the Boston Navy Separation Center on January 15. A veteran of 40 months' active service, Lieutenant Schreiber was last stationed at the famed Oak Ridge, Tenn., development, where he was doing work in connection with atomic bomb constituents and patent work in construction with the atomic bomb. He wears the Army shoulder patch for Manhattan District activities. Before entering the Navy, he was a chemical engineer, engaged in war production work. — Captain Arthur R. Olson has entered the research laboratories of the United Shoe Machinery Company in Beverly, Mass. He was formerly stationed in the Chemical Warfare Service at Technology. He is married to the former Caroline Brownlow of Medford, and they have two children. — Mr. and Mrs. Clarence G. Ford announce the engagement of their daughter, Pauline Margaret, to Justin P. Lavin. Justin was until lately a lieutenant in the Navy Air Corps. As yet no date has been set for the wedding. — Another engagement announced in December is that of Henry Kettendorf, a lieutenant commander, to Cornelia Sullivan of South Braintree. Keri is at present attached to the office of the supervisor of shipbuilding in New York City; the definite date for their wedding likewise has not as yet been announced.

And, finally, another public relations office press release, courtesy of the Army, tells us the following: Lee C. Heroman was relieved from active duty in the Army in February at Fort Sheridan, Ill. Major Heroman entered the Army in March, 1942, and was initially assigned to the Frankford Arsenal in Philadelphia, where he was an engineering officer in the fire control sub-office. In March, 1944, he was transferred to the Chicago Ordnance District and assigned as chief of the fire control section of the artillery branch, where he was placed in charge of all fire control instrument procurement in the district. Before his entry into the service, Major Heroman was employed by the Standard Oil Company of New Jersey as a process engineer in their plant at Baton Rouge, La. Upon his release from the service, Major Heroman will join the Marathon Corporation in Menasha, Wis., as an engineer in the technical division. He and Mrs. Heroman will make their home in Neenah, Wis. — STUART PAIGE, General Secretary, 336 Brookbend Road, Fairfield, Conn. ROBERT C. CASSELMAN, Assistant Secretary, 271 Cypress Street, Newton Center 59, Mass.

1940

Hap Farrell has given us a few details of his experiences in the Army. He went on active duty just after completing his course at the Institute in June, 1941, reporting for his first assignment with the A Company of the 803d Engineer Battalion (Aviation) at Fort Belvoir, Virginia, on August 1, 1941. His outfit was sent out in the late summer of 1941 to the Philippines, so that he was there during the bombing and capture of Manila and the battle of Bataan, right up through the surrender of Corregidor on May 6, 1942. As a prisoner of war of the Japanese he was kept in Cabanatuan, P.I., un-

til November 4, 1942. He had the doubtful pleasure of arriving at Tanagawa, a small camp outside of Osaka, in Japan, on Thanksgiving Day of that year. He was kept in this camp for most of the war, a total of 28 months. When the camp was broken up in March, 1945, he was shifted temporarily to a coal mine camp in Kyushu. He spent the summer before V-J Day at still another camp at Mukden in Manchuria. Back in the United States since November 1, he enjoyed for a time an enforced Army vacation in Texas and then traveled and visited all over the country in a new car. By July 1, when he will be separated from the Army, he hopes to be settled down in the right job.

Clem Burnap, a lieutenant commander, writes that he is with the industrial relations division in the naval shipyard at Pearl Harbor, this being the first time in years that he is able to say where he is and will be for the next few months. He is scheduled to remain on duty there until August unless he is transferred or uses the points he has to obtain a discharge. He has been in the ship superintendent's office working on the repair and conversion of some of the larger ships, including the carrier, U.S.S. *Franklin*, and the cruiser, U.S.S. *Baltimore*. He has stayed on as labor relations officer for the Navy Yard, even though he was scheduled for release, because of his interest in the job and the good experience that it offered. Also pertinent is the fact that he received a promotion for the job and was able to obtain permission for his wife to come to Honolulu. He has seen several Course XIII men there at the Navy Yard but none from our Class. — H. GARRETT WRIGHT, General Secretary, Garrett Construction Company, 510 Sherman Avenue, Springfield, Mo. THOMAS F. CREAMER, Assistant Secretary, 2032 Belmont Road, North West, Washington, D.C.

1941

We are continuing the service on locating recently converted members of the armed forces. *Ex* is the prefix which should precede all of the following ranks: Captain Irving Berman, now located in Brooklyn, N.Y.; Captain George Clemow, Kenmore, N.Y.; Captain Bob Smith, York, Pa.; Lieutenant Bill Sheard, Freeport, N.Y.; Captain Anthony Montanaro, Providence, R.I.; Lieutenant Clifford Moffet, Waltham, Mass.; Major John Lyons, Danvers, Mass.; Lieutenant Vincent Kling, Cranford, N.J.; and Captain Michael Masnick, Jamaica, L.I. Out of the country at present are these three men: Paul W. Branning in Rio de Janeiro, Brazil; Fikret Bebe in Ankara, Turkey; and Tan-Cheng Liu in Shanghai, China.

The engagement of Helen Waslo to Michael Masnick was announced recently; Mike has been in the service for the last four years as a radar and communications officer, stationed in South America. Jean Hallas, of Boston University, recently announced her engagement to Warner Knight. Marion Turner is engaged to Bob Taylor; and Elizabeth Nicholson is engaged to David Fish, a lieutenant colonel. We have heard of the marriage of Ruth Hall to James Neighbours, a lieutenant commander; Elizabeth Elley has become Mrs. George Newton; and Barbara Ebert is now Mrs. Walter Carran. Walt has recently returned from

two years in the South Pacific. Out in Emporia, Kansas, Mary Groh has become Mrs. Edward Sheridan. The arrival of Robert Dean Gott to Alice and Lester Gott is worthy of note; your Assistant Secretary, also, is now to be congratulated as a proud father, with best wishes from this end of the secretarial staff.

A note from Julius Kohn reads: "I spent the war working at General Electric in Schenectady on — and —. A few weeks ago I left G.E. and went to work as a mechanical engineer for the United States Time Corporation. My wife is still in Schenectady while I'm trying to find a place to live. I'd like to hear from any of the fellows who may happen to be in these parts." — We received notice of the award to Leonhard Katz of the Air Medal for meritorious achievement. Also winner of the Distinguished Service Medal, Lieutenant Katz is at present assigned to the engineering division of the Air Technical Service Command.

Another letter from Bill Ahrendt indicates that a bit of naval service hasn't subdued the old organizer. Says Lieutenant Bill, "I've been canvassing for a big turnout at our five-year reunion, telling all of our Class whom I happen to meet to make a special effort to get back to Tech to see the impact of five years on the rest of the boys [well put, Bill]. Recently I've seen Paul Erlandson, John Murdock, Paul Sanderson, Sam Fry, Herb Stein, Fred Haddock, Joe Gavin, Ray Harper, John Wheeler, and Herman Affel in Washington, and they all promised to spread the word." Add to this spontaneous backing the efforts of Will Mott and Johan Andersen, and our June reunion is assured of success. A committee has been formed, consisting of Don Howard, John Sexton, and Dave Howard, and as plans stand at this time, there will be a banquet in Boston on Friday evening, June 7. Further information on this will be forthcoming as available. Any suggestions will be appreciated by the committee.

We regret to announce the death of William G. Holton of Vanceburg, Ky., who was associated with our Class at the Institute. Dr. Holton died on November 25. Censorship of letters from Richard H. Seabury to his father leaves us with little information concerning his death on July 7 in the Pacific area while in the service of his country. Seabury entered the Navy in October, 1941, as a seaman and advanced to the rank of a petty officer; he was an electrician's mate, first class, at the time of his passing. The Class is united in its feeling of sympathy for the Holton and Seabury families. — STANLEY BACKER, *General Secretary*, 101 Providence Road, Primos, Pa. JOHAN M. ANDERSEN, *Assistant Secretary*, Saddle Hill Farm, Hopkinton, Mass.

1943

The former Constance O'Neil and Bob Jorgensen, a Navy Lieutenant, were married in the Saint Francis Xavier rectory, South Weymouth, Mass., on last February 2. Constance's home is in North Wey-

mouth, and before her marriage she was a nurse in the South Shore Hospital. Bob, a radar officer in the Navy, when last heard from, was stationed in Norfolk, Va. — The engagement of Marian Manning Coons of Shaker Heights, Ohio, and Bill Lacy, an Army captain, is announced. Recent history reveals that Marian was graduated from Pine Manor Junior College in Wellesley, and that Bill is on terminal leave after 22 months in the European theater.

We have heard indirectly that Norman Gordon, a junior grade lieutenant, was released from the Navy last December for duty with the United Nations Relief and Rehabilitation Administration in China and that he was later selected by Generalissimo Chiang Kai-shek to serve as adviser to the Chinese Ministry of the Interior in a program to rebuild devastated areas of that country. Norman has recently completed a survey of Shanghai and submitted plans for the reconstruction of that city in readiness for the arrival of a million refugees who are expected to return from the interior. Before entering the Navy, Norman had posts with the regional planning boards in Cleveland, Boston, and Montclair, N.J. During the war he was assigned to the Sino-American co-operative organization which trained Chinese guerrillas behind the Japanese lines.

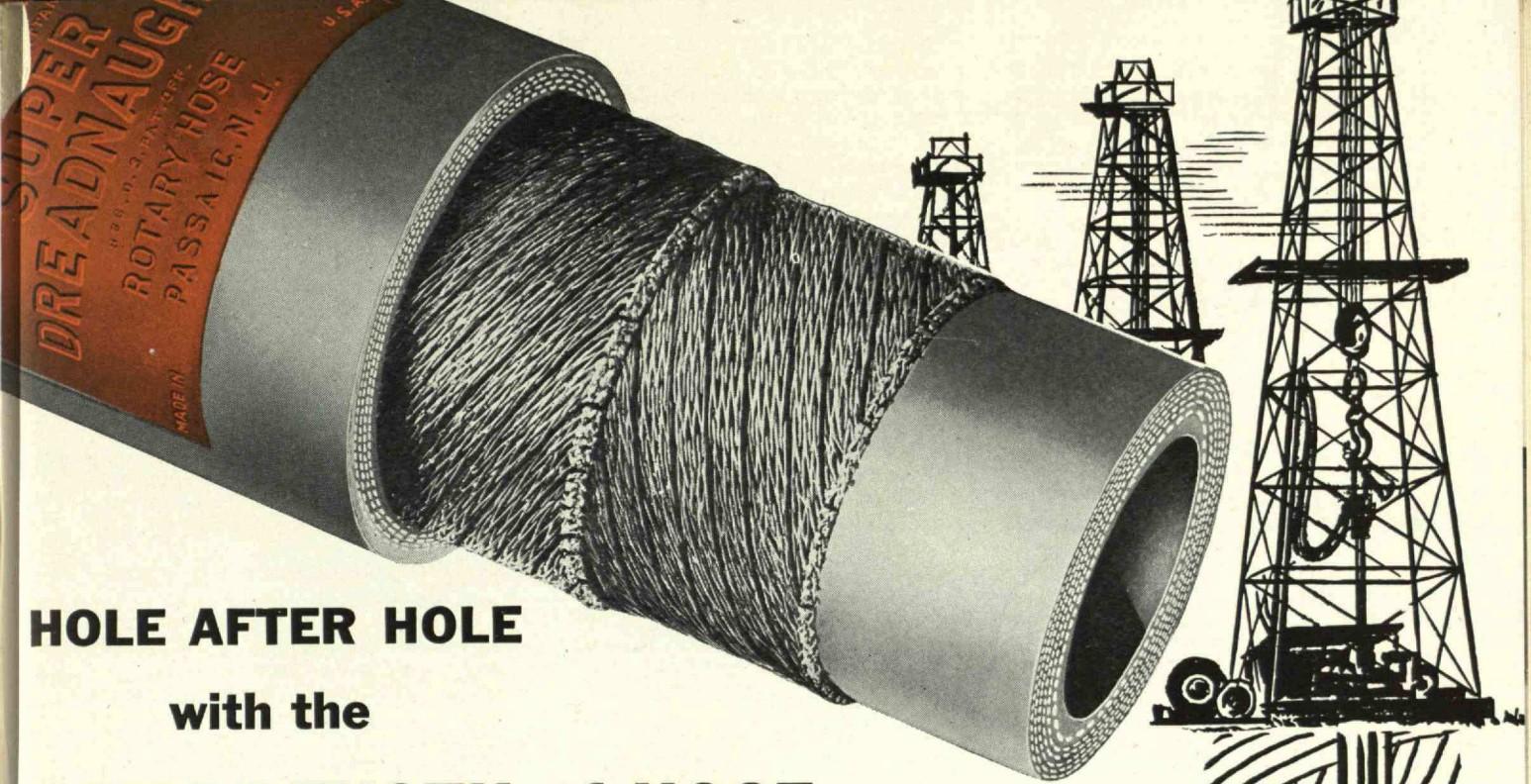
It is not often that we have the opportunity to record the activities of the fairer few in the Class, but news has come to hand that Margaret Murray has been appointed as health education secretary for the Cambridge Tuberculosis and Health Association. During the last year or two, she has been health education co-ordinator for the Boston Health Department. — The public relations officer of the Army Air Forces Weather Wing at Langley Field, Va., has informed us that George Austin was promoted to the rank of captain early this year. Presently, he is assigned to the operating and training division of the A.A.F. Weather Service.

You will recall with sadness that we had to record that Douglas Fenton has been declared killed in action. News of his submarine's last trip has reached us. The U.S.S. *Kete* was on her third trip. Her first two trips were lifesaving missions for picking up floating personnel. Her third and last trip started very aggressively from Guam on March 1. Three or four Japanese vessels were sunk in the East China Sea, and a cable-laying ship was chased. After these exploits, the *Kete* ran short of torpedoes and was ordered to Midway for refitting. On or about March 20, 1945, she acknowledged her orders while en route to Midway by the East Corlett Straits. On the following day her officers sent in their customary weather report and gave their last position. Nothing else has been heard from them. Admiral Lockwood, in charge of all submarines in the Pacific, thinks that they may have been lost through submarine action from Japanese sources as they were passing through the Straits. Commander Rutter,

who was in charge of the *Kete* until this last trip, suggests that attack by hostile aircraft may have been her fate.

A letter from Bill Small tells us that before the war he was with J. R. Worcester and Company "as a rodman and instrumentman. In July, 1942," he continues, "I enlisted as a chief petty officer in the C.B.'s. After finishing boot camp in Norfolk, Va., my company was sent to New River, N.C., as a maintenance unit. I was reassigned to a unit on St. Thomas, which completed a naval base previously begun by a civilian contractor and then returned to the States. Four months later I was in a special assault pontoon battalion which finally reached Okinawa on D-Day plus three. I was in charge of a warping tug there which was used to pull landing craft off the beach after they were high and dry."

Finally, for this month, a veritable autobiography from Mort Goodfriend, who has the following to say: "Since I have received a great deal of pleasure from reading the doings of the rest of the Class in The Review, I have written with the supposition that someone might care about my doings and whereabouts; so here is the story. Shortly after graduation I reported for active service as an ensign in the Pratt and Whitney Engine School in Hartford, Conn. After completing the course, I had a short stretch of duty in Norfolk, Va. June 3, 1943, saw me reporting for duty in the light carrier, U.S.S. *Independence*, as assistant air maintenance officer. We left the States on June 14 and headed for the Panama Canal and destinations farther westward with the first carrier-borne F6F's. My ship had a wonderful record, and I firmly believe her to be the best ship afloat — though not for much longer, as she is scheduled to go out in a blaze of glory in the forthcoming atom bomb test. I left her after the invasion of Leyte and returned home for reassignment in November, 1944. I went back to school, this time in Memphis, Tenn., at the Naval Air Engineering Officers' School. From there, I was assigned to the Naval Air Transport Service as C-47 and C-57 maintenance officer. Oakland was my station from April to last November, when I requested Asiatic duty and was attached to the Asiatic Wing of the N.A.T.S. at the main base in Guam. I now expect release from active duty about the middle of April. Before that time comes, however, I hope to have an opportunity to make a tour of all the N.A.T.S. bases in the Far East as an engineering survey officer. Of the others out here I have the following news. Bill Maxwell is married and has a two-year-old son, Bill, Jr. Frank Smith is in the Philippines, as is Fred Mulhaupt. [See last month's class notes.] Kemp Maples [now returned to Tech] was in Okinawa with a Marine antiaircraft unit. Harry Anderson, master technical sergeant in the Marines, is on his way home on leave after a tour of duty in China." — CLINTON C. KEMP, *General Secretary*, Barrington Court, 988 Memorial Drive, Cambridge 38, Mass.



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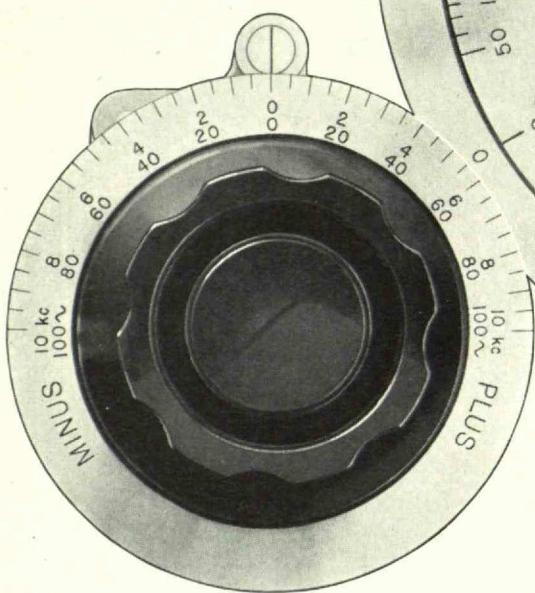
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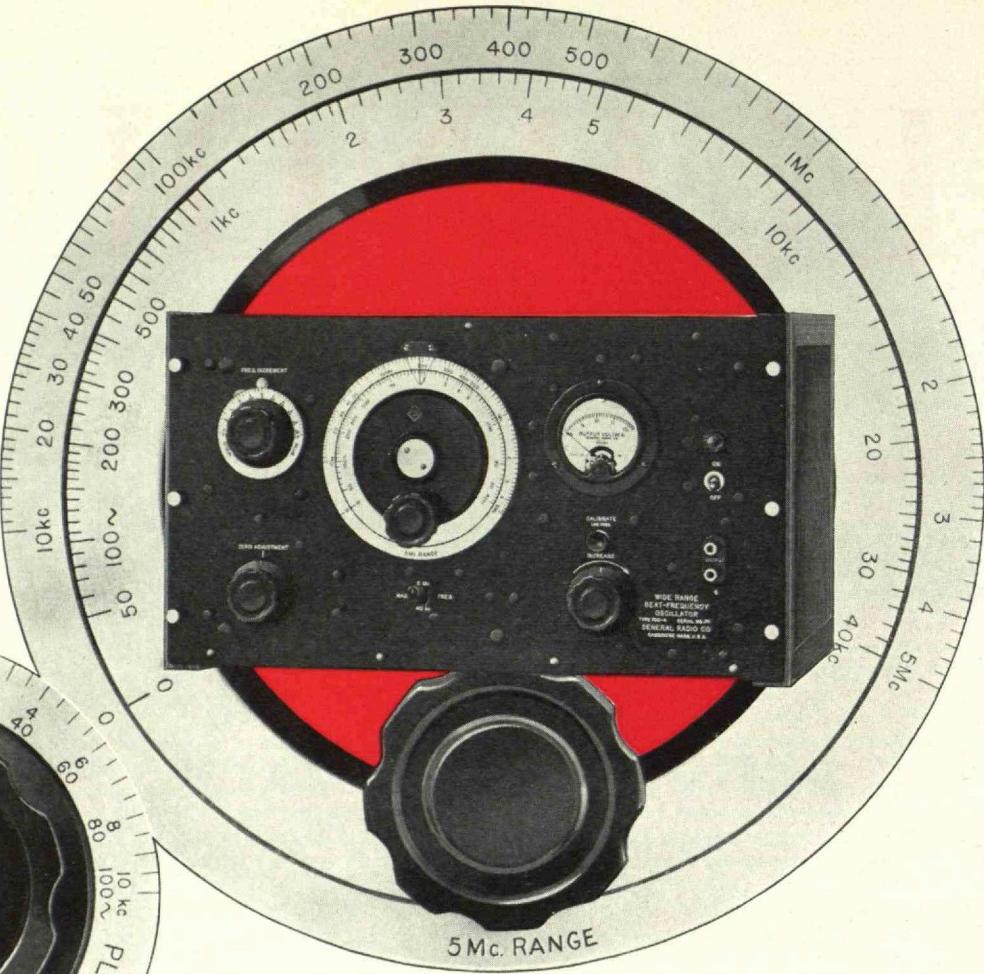
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